ORDER NO. ARD-7907059C

Service Manual

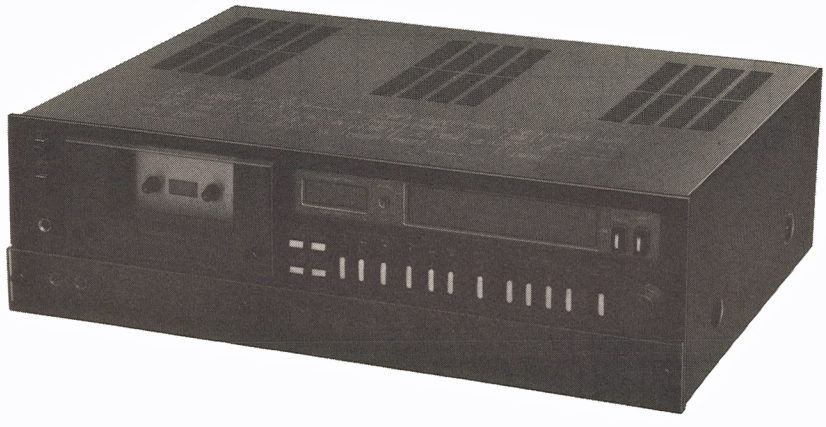
Cassette Deck

RS-M95

(Black Face)

Quartz Phase Locked Direct-Drive Cassette Deck with
Microprocessor Tape Tention Control, New 3 Head System

DOLBY SYSTEM



This is the Service Manual for the following areas.

- [D] ····· For All European areas except United Kingdom.
- [B] ····· For United Kingdom.
- [A] ····· For Australia.

Professional Series

RS-M85 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback	
Tape speed:	4.8 cm/s	
Wow and flutter:	0.03% (WRMS), ±0.09% (DIN)	
Frequency response:	Metal tape;	20 — 20,000 Hz
		20 — 20,000 Hz (DIN)
		20 — 20,000 Hz ±3 dB
	(0 VU)	20 — 13,000 Hz ±3 dB
	CrO_2/Fe-Cr tape;	20 — 20,000 Hz
		20 — 19,000 Hz (DIN)
		20 — 19,000 Hz ±3 dB
	Normal tape;	20 — 18,000 Hz
		20 — 17,000 Hz (DIN)
		20 — 17,000 Hz ±3 dB
Signal-to-noise ratio:	Dolby* NR in; 70 dB (above 5 kHz)	
	Dolby NR out; 60 dB	
	(signal level = max. recording level, Fe-Cr/CrO_2 type tape)	
Fast forward and rewind time:	Approx. 80 seconds with C-60 cassette tape	

Inputs:	MIC; sensitivity 0.25 mV, input impedance 10 kΩ applicable microphone impedance 400Ω — 10 kΩ
	LINE; sensitivity 60 mV, input impedance 60 kΩ
Outputs:	LINE; output level 650 mV, output impedance 6 kΩ or less, load impedance 20 kΩ over
	HEADPHONE; output level 88 mV, load impedance 8Ω
Bias frequency:	85 kHz
Motor:	2-motor system
	Capstan; 1-quartz control phase-locked DC brushless direct-drive motor
	Reel table; 1-DC coreless motor
Heads:	3-head system
	2-HPF heads for rec/playback (combination type)
	1-sendust/ferrite double-gap head for erasure
Power requirements:	AC; 110/125/220/240 V, 50-60 Hz
Power consumption:	46 W (50 W for England and Australia)
Dimensions:	45 cm (W) × 14.2 cm (H) × 34.8 cm (D)
Weight:	12 kg

Specifications are subject to change without notice.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS

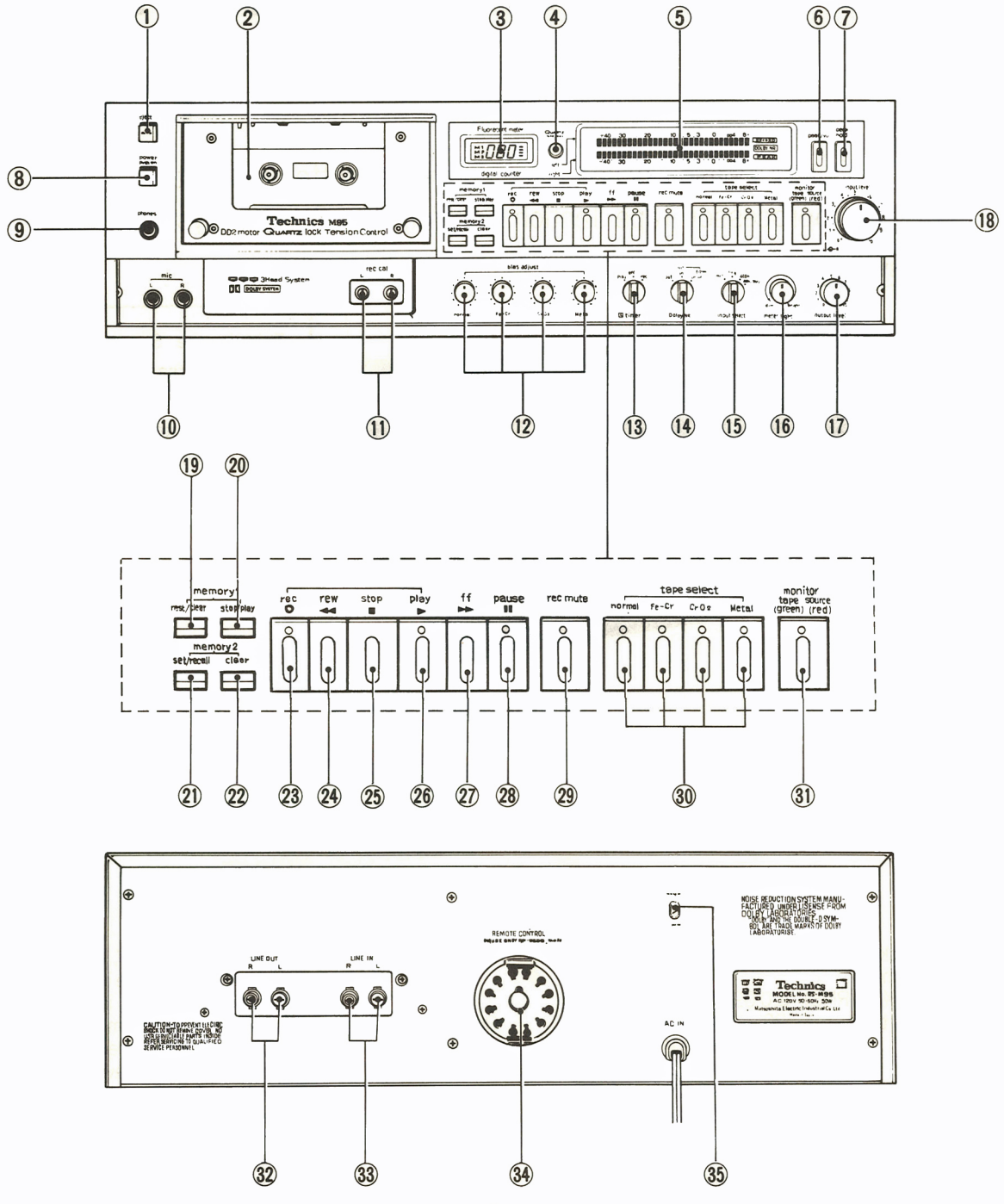


Fig. 1

① Eject button
② Cassette compartment door
③ Digital tape counter
④ Quartz strobo
⑤ Fluoresent level meter
⑥ Peak/VU selector
⑦ Peak-hold selector
⑧ Power switch
⑨ Headphones connection jack
⑩ Microphone connection jacks
⑪ Recording-calibration controls
⑫ Bias controls
⑬ Timer operation selector
⑭ Dolby noise-reduction selector
⑮ Input selector
⑯ Meter-brightness control
⑰ Output-level control
⑱ Input-level controls
⑲ Memory-1 reset/clear button
⑳ Memory-1 stop/play button
㉑ Memory-2 set/recall button
㉒ Memory-2 clear button
㉓ Record button and record-indication lamp
㉔ Rewind button
㉕ Stop button
㉖ Playback button and playback-indication lamp
㉗ Fast forward button
㉘ Pause button and pause-indication lamp
㉙ Record-muting button and muting-indication lamp
㉚ Tape selectors and tape-indication lamps
㉛ Monitor selector and LED monitor indicator
㉜ Line-output connection jacks
㉝ Line-input connection jacks
㉞ Remote-control connector
㉟ Voltage selector

DISASSEMBLY INSTRUCTIONS

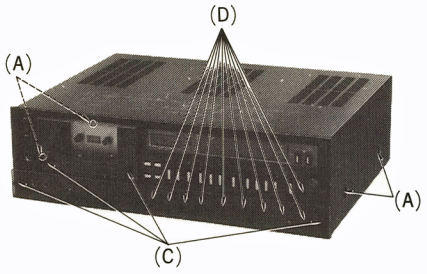


Fig. 2

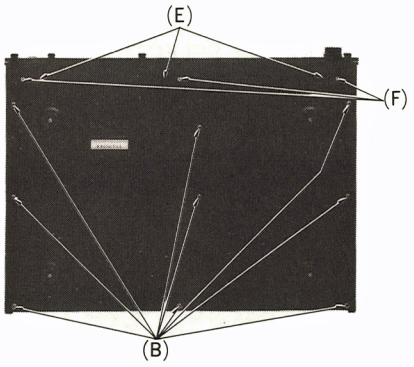


Fig. 3

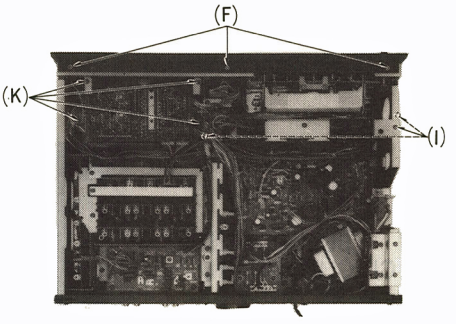


Fig. 4

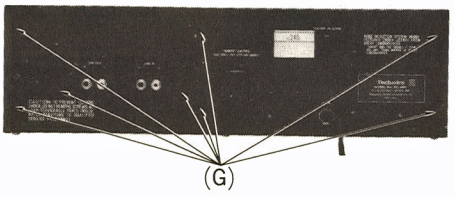


Fig. 5

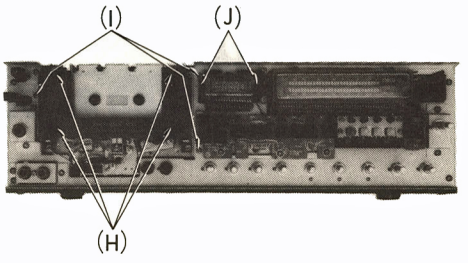
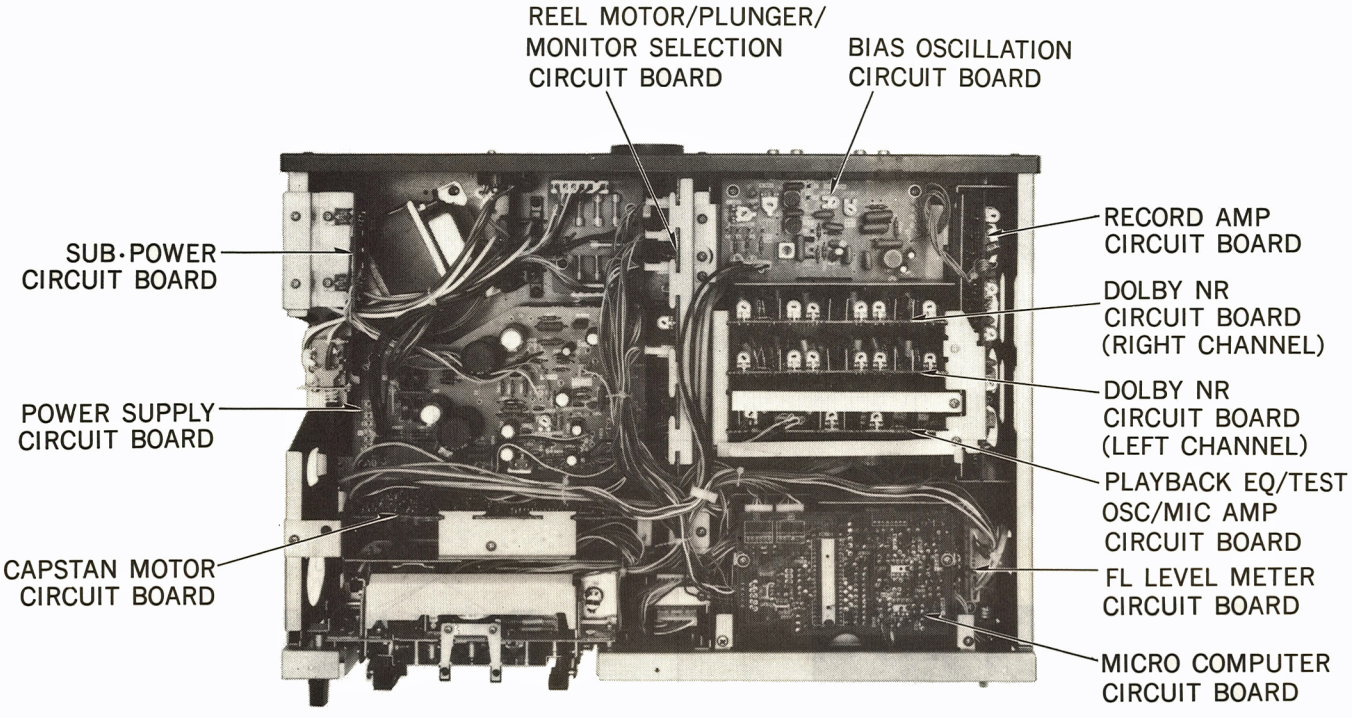


Fig. 6

Procedure	To remove —— .	Remove —— .	Shown in fig. —— .
1	Case cover	• 4 black screws ····· (A)	2
2	Bottom cover	• 9 red screws ····· (B)	3
3	Front panel	• 4 screws ····· (C) • 10 control knobs ····· (D) • 3 screws ····· (E) • 6 black screws ····· (F)	2 2 3 3, 4
4	Back cover	• 8 black screws ····· (G)	5
5	Cassette lid	• 4 black screws ····· (H)	6
6	Mechanism	• 6 screws ····· (I)	4, 6
7	Tape counter	• 2 counter holders ····· (J)	6
8	FL level meter	• 4 screws ····· (K)	4

CIRCUIT BOARDS LOCATION



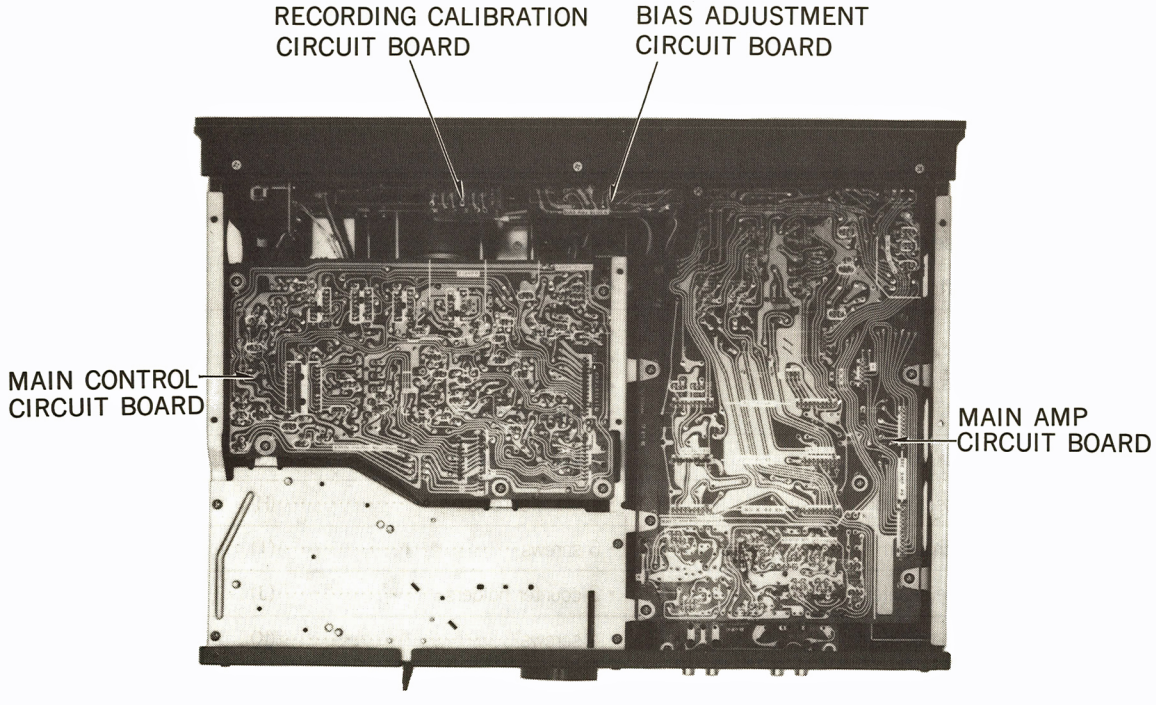
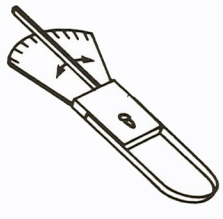
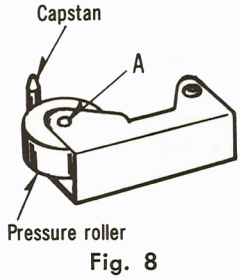
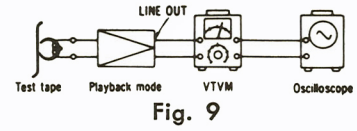
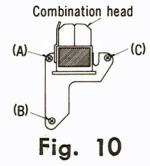
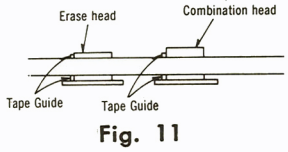
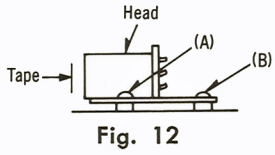


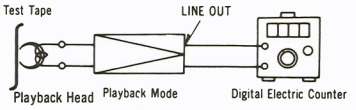
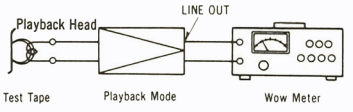
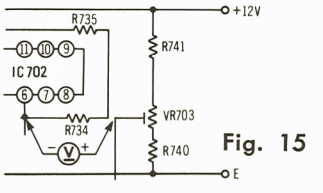
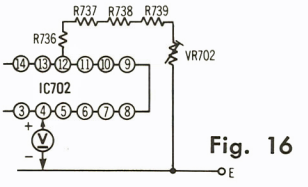
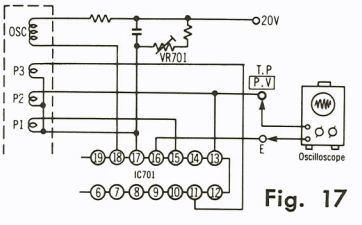
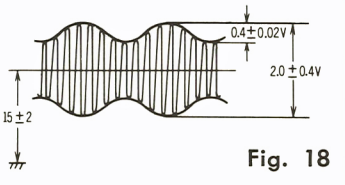
Fig. 7

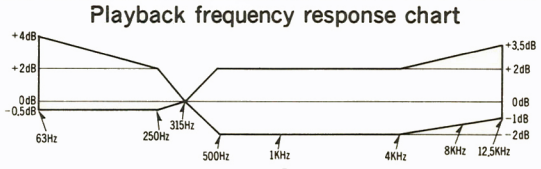
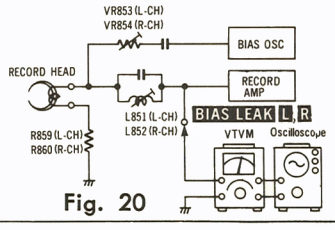
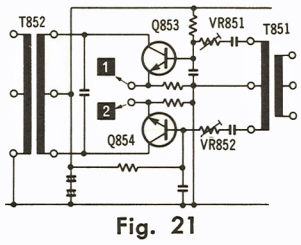
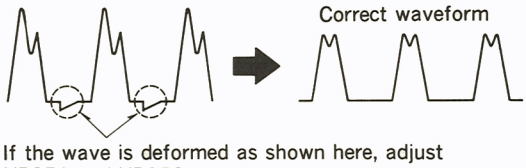
MEASUREMENT AND ADJUSTMENT METHODS

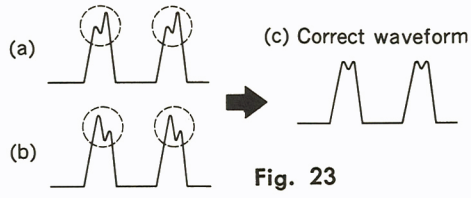
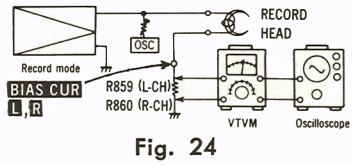
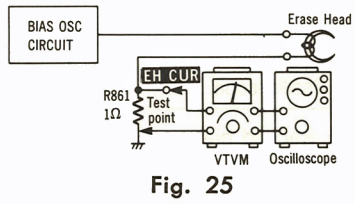
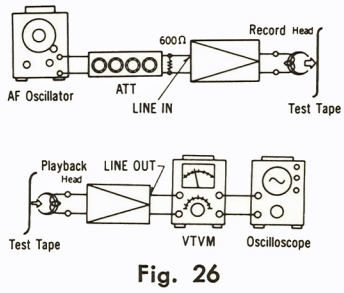
NOTE:

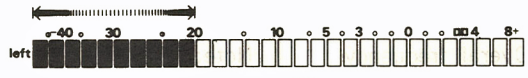
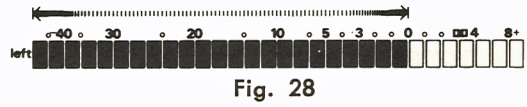
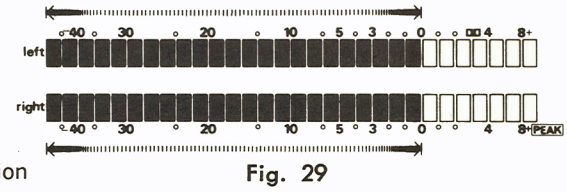
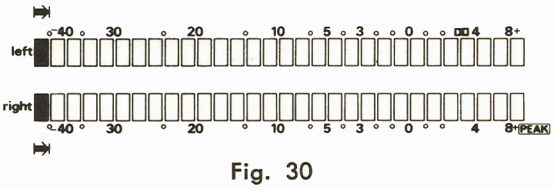
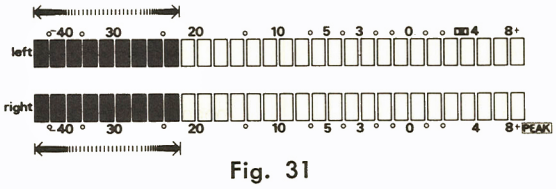
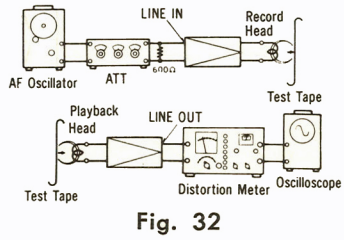
1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
3. Judgeable room temperature: 20±5°C (68±9°F).
4. Tape selector: Normal.
5. Monitor selector: Tape.
6. Bias adjustment control: Center.
7. Input level control: Maximum.
8. Output level control: Maximum.
9. Dolby NR selector: Out.
10. Input selector: Line.
11. Meter light control: Bright.
12. Peak/VU selector: Peak.
13. Peak hold selector: OFF.
14. Timer selector: OFF.

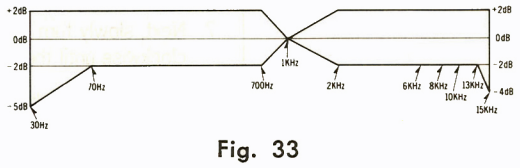
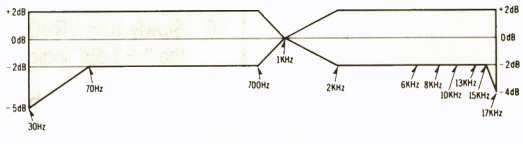
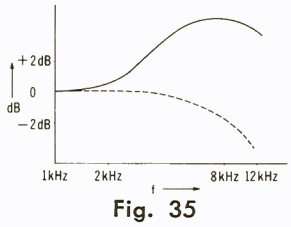
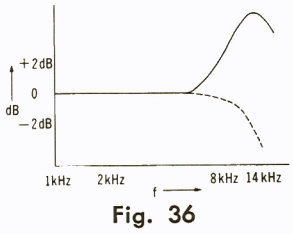
ITEM	MEASUREMENT & ADJUSTMENT
Ⓐ Power supply adjustment	+20V adjustment 1. Connect voltmeter to the test point [20V T.P] on the power circuit board and read voltage. Standard value: +20±0.5V 2. If measured value is not in standard, adjust VR801 as shown in fig. 37.
Ⓑ Pressure of pressure roller Condition: * Playback mode Equipment: * Tension gauge (max. 500 gr)	1. Place UNIT into playback mode. 2. Hook tension gauge to pressure roller shaft top (A), and pull gauge in direction opposite to pressure of pressure roller against capstan (See fig. 8). 3. Read pressure indicated on gauge immediately when pressure roller moves away from capstan and stops rotating. Standard value: 400±30 gr   Fig. 8
Ⓒ Takeup tension Condition: * Playback mode Equipment: * Cassette torque meter (QZZSRKCT)	1. Mount cassette torque meter on UNIT. 2. Place UNIT into playback mode. 3. Measure the takeup torque within 15 seconds after starting the playback mode. Standard value: 40±2 gr-cm 4. If measured value is not within standard, adjust VR601.
Ⓓ Combination head adjustment Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCRD (Tape path viewer with mirror) * Test tape ··· QZZCFM (azimuth)	1. Test equipment connection is shown in fig. 9. 2. Playback the test tape (QZZCRD). 3. In this condition, adjust screws (A) and (B) shown in fig. 10 and 12 so that the tape may not get curled or malformed by tape guides of the erase head and the combination head (fig. 11 shows correct condition). **Note:** For the combination head carefulley adjust the height so that the head surface contacts the tape in parallel shown in fig. 12. 4. Playback the azimuth tape (QZZCFM 8kHz). 5. Adjust the combination head angle adjustment screw (C) in fig. 10 so that the output level at LINE OUT becomes maximum. 6. Measure both channels, and adjust levels for equal output. 7. After adjustment, lock the head adjustment screws with lacquer.  Fig. 9  Fig. 10  Fig. 11  Fig. 12

ITEM	MEASUREMENT & ADJUSTMENT
Ⓔ Tape speed Condition: * Playback mode Equipment: * Digital electronic counter * Test tape ··· QZZCWAT	**Tape speed accuracy** 1. Test equipment connection is shown in fig. 13. 2. Playback test tape (QZZCWAT 3,000 Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000 Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3{,}000}{3{,}000} \times 100\ (\%)$ f = measured value 5. Take measurement at middle section of tape. **Standard value: ±0.4%**  **Fig. 13** **Tape speed fluctuation** Make measurements in same manner as above (beginning, middle and end of tape), and determine difference between maximum and minimum values and calculate as follows: $\text{Tape speed fluctuation} = \frac{f_2 - f_2}{3{,}000} \times 100\ (\%)$ f_1 = maximum value, f_2 = minimum value **Standard value: Less than 0.3%**
Ⓕ Wow and flutter Condition: * Playback mode Equipment: * Wow meter * Test tape ··· QZZCWAT	1. Test equipment connection is shown in fig. 14. 2. Use wow test tape (3,000 Hz) and measure its playback signal on wow meter. 3. Wow and flutter is expressed in percentage and that measurement can be weighted by JIS network (WRMS). 4. Measure at middle section of test tape. **Standard value: 0.04% (WRMS)**  **Fig. 14**
Ⓖ Capstan motor circuit adjustment Condition: * Playback mode Equipment: * DC voltmeter * Oscilloscope	**A. Standard DC power supply voltage adjustment** 1. Measure the DC voltage between central point of VR703 and ⑥ terminal of IC702 as shown in fig. 15. **Standard voltage: 0±0.05 V** 2. If measured voltage is not within standard, adjust VR703.  **Fig. 15** **B. Phase lock point adjustment** 1. Measure the DC voltage between ④ terminal of IC702 and ground as shown below. **Standard voltage: 5.2±0.1 V** 2. If measured voltage is not within standard, adjust VR702.  **Fig. 16** **C. Position detecting signal output level adjustment** 1. Connect oscilloscope to test point (T.P P.V). 2. Measure the peak-to-peak voltage of position detection signal of test point with the oscilloscope. 3. If the measured signal voltage is markedly different from the voltage shown below, make the necessary adjustment with VR701.  **Fig. 17**  **Fig. 18**

ITEM	MEASUREMENT & ADJUSTMENT
Ⓗ Playback frequency response Condition: * Playback mode * Output level control ··· MAX Equipment: * VTVM * Oscilloscope Test tape ··· QZZCFM	**Playback frequency response chart**  **Fig. 19** 1. Test equipment connection is as same as "Head azimuth adjustment" but use the test tape (QZZCFM) instead of head azimuth tape (See fig. 9). 2. Place UNIT into playback mode. 3. Playback frequency response test tape (QZZCFM). 4. Measure output level at 12.5 kHz, 8 kHz, 4 kHz, 1 kHz, 250 Hz, 125 Hz and 63 Hz and compare output level with standard frequency 315 Hz at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart. 7. If measured value is not in standard, adjust VR1 (L-CH), VR2 (R-CH) (See fig. 35 on page 9).
Ⓘ Playback gain Condition: * Playback mode * Output level control ··· MAX Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 9. 2. Playback standard recording level portion on test tape (QZZCFM 315 Hz) and, using VTVM, measure the output level at LINE OUT jack. 3. Make measurement for both channels. **Standard value: 0.65±0.05 V** **Adjustment** 1. If measured value is not standard, adjust VR101 (L-CH), VR102 (R-CH) (See fig. 37 on page 11). 2. After adjustment, check "Playback frequency response" again.
Ⓙ Playback S/N ratio Condition: * Playback mode * Output level control ··· MAX Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM * Empty cassette	1. Test equipment connection is shown in fig. 9. 2. Playback standard recording level test tape (QZZCFM 315 Hz) and read output level on VTVM. Refer to "Playback gain adjustment". 3. Place empty cassette (which has been cut) and playback again. 4. Measure noise level at this time using VTVM, and determine ratio of this level to test tape output signal voltage (315 Hz). **Standard value: Greater than 47 dB**
Ⓚ Bias leak Condition: * Record mode * Input level control ··· MAX Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 20. 2. Place UNIT into record mode. 3. Adjust trap coils L851 (L-CH), L852 (R-CH) so that measured value becomes minimum (See adjustment parts location on page 11). 4. Make adjustment for both channels.  **Fig. 20**
Ⓛ Record bias amplifier circuit	**Transistor base current waveform adjustment** **A. Lower part of wave form** 1. Set the tape selector to the "Metal" position. 2. Press the record and pause buttons. 3. Connect the oscilloscope to 1 (for Q853) and 2 (for Q854). 4 Observe the wave form on the oscilloscope, and adjust VR851 (for Q853) and VR852 (for Q854) so that the lower part of the wave form is as shown in fig. 22. **Note:** The wave form can be improved by turning VR851 and VR852 counterclockwise. Stop turning VR851 and VR852 immediately after elimination of deformed part of the wave.  **Fig. 21**  **If the wave is deformed as shown here, adjust VR851 and VR852** **Fig. 22**

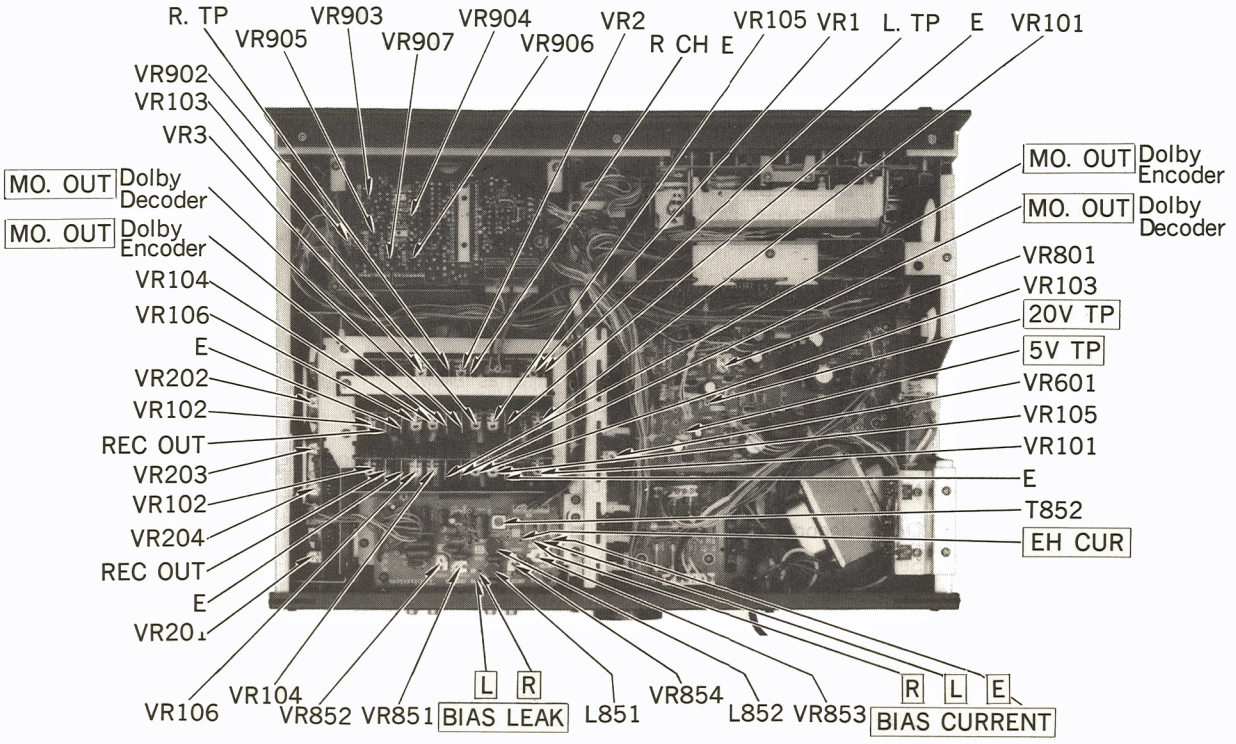
ITEM	MEASUREMENT & ADJUSTMENT
	B. Upper part of wave form 5. After adjusting the lower part of the wave form, observe the upper part of the wave. 6. If the wave form is as symmetrically distorted as shown in fig. 23, adjust T852.  Fig. 23 **Note:** If the wave form is observed as in (a), turn T852 clockwise. If the wave form is observed as in (b), turn T852 counterclockwise. In each case to achieve symmetrical pattern as shown in (c).
Ⓜ Bias current Condition: * Record mode * Bias adjustment control ··· Center Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 24. 2. Press the record and pause buttons. Set the tape selector to normal position. 3. Read voltage on VTVM and calculate bias current by following formula. $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$ **Standard value: 1.0±0.3mA**  Fig. 24 4. Adjust VR853 (L-CH) and VR854 (R-CH) (See adjustment parts location on page 11). 5. Then changing the tape selector to Fe-Cr position measure the bias current. **Standard value: 1.1±0.3mA** 6. If measured value is not in standard, adjust VR202. 7. Change the tape selector to CrO_2 position, measure the bias current. **Standard value: 1.5±0.4mA** 8. If measured value is not in standard, adjust VR203. 9. Change the tape selector to the "Metal" position, measure the bias current. **Standard value: 2.2±0.6mA** 10. If measured value is not in standard, adjust VR204.
Ⓝ Erase current Condition: * Record mode * Bias adjustment control ··· Center Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 25. 2. Set the tape selector to the "Metal" position. 3. Press the record and pause buttons. 4. Measure voltage on VTVM. 5. Determine erase current with the following formula. $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R861}}{1\ (\Omega)}$ **Standard value: 95^{+5}_{-0}mA (Metal position)**  Fig. 25 6. If measured value is not within standard, adjust VR201.
Ⓞ Overall gain Condition: * Standard input level: MIC ····· −72±3dB LINE IN ··· −24±3dB Equipment: * AF oscillator * VTVM * ATT * Oscilloscope * Test tape (reference blank tape) ··· QZZCRA for Normal	1. Test equipment connection is shown in fig. 26. 2. Set the tape selector to "Normal" position. 3. Supply 1kHz signal (−24dB) from AF oscillator, through ATT, to LINE IN. 4. Adjust ATT until source monitor level at LINE OUT becomes 0.65V. 5. Using test tape, make recording. 6. Then, measure the tape monitor output level at LINE OUT on VTVM. **Standard value: 0.65±0.05V** 7. If measured value is not within standard, adjust VR102.  Fig. 26

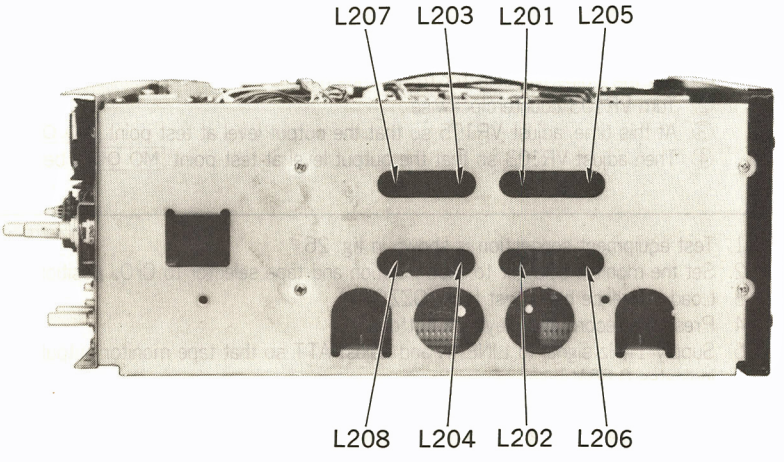
ITEM	MEASUREMENT & ADJUSTMENT
Ⓟ Fluorescent level meter Condition: * Record mode * Peak/VU selector ··· Peak position Equipment: * VTVM * AF oscillator * ATT	1. Test equipment connection is shown in fig. 26. 2. Set the monitor switch to the "source" position. 3. Supply 1 kHz signal (−24 ± 3 dB) to the LINE IN jack. 4. Adjust the ATT so that the source monitor output level of left channel becomes 0.65 V. * The attenuation of ATT at that point is the standard input level. **A. Adjustment of "−20 dB" indication (Left channel indication)** 5. Attenuate ATT by 20 dB from the standard input level. (Then, the source monitor output level is 0.065 V.) 6. Turn VR903 clockwise completely. 7. Next, slowly turn VR903 counterclockwise until the "−18 dB" indication on the meter goes out.  Fig. 27 **B. Adjustment of "0 dB" indication (Left channel indication)** 8. Set the ATT to the standard level. (Then, the source monitor output level is 0.65 V.) 9. Turn VR907 counterclockwise completely. 10. Slowly turn VR907 clockwise until the "+1 dB" indication on the meter goes out.  Fig. 28 **C. Adjustment of balance between right and left channels.** 11. After the adjustment in B, adjust VR902 (for right channel), if necessary, so that the right channel indication matches the left channel indication.  Fig. 29 **D. Adjustment of "−42 dB" indication** * "−42 dB" indication lights up with power supply turned on. 12. Attenuate the ATT by 42 dB from the standard input level. (Then, the source monitor output level is 0.0052 V.) 13. Fully turn VR904 (for L-CH) and VR905 (for R-CH) clockwise.  Fig. 30 14. Slowly turn VR904 and VR905 counterclockwise until the "−40 dB" indication on the meter goes out. **E. Adjustment of "−22 dB" indication** 15. Attenuate the ATT by 22 dB from the standard input level. (Then, the source monitor output level is 0.052 V.) 16. Turn VR906 counterclockwise completely. 17. Slowly turn VR906 clockwise until the "−20 dB" indication on the meter goes out.  Fig. 31
Ⓠ Overall distortion Equipment: * Distortion meter * AF oscillator * ATT * Oscilloscope * Test tape ··· QZZCRA (reference blank tape)	1. Test equipment connection is shown in fig. 32. 2. Set the monitor selector to "source" position. 3. Supply 315 Hz signal to LINE IN and adjust ATT so that output level at LINE OUT indicates 0.65 V. 4. Change the monitor selector to "tape" position. 5. Press the record and playback buttons, and measure distortion factor of tape monitor output signal.  Fig. 32

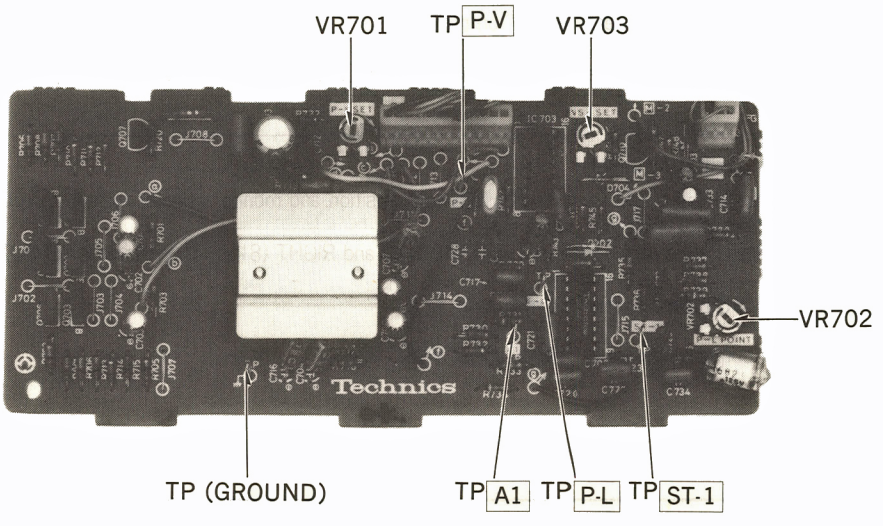
ITEM	MEASUREMENT & ADJUSTMENT
	6. When the distortion factor does not satisfy the standard, check the bias current. When the bias current is lower than standard, distortion will increase. Care should be exercised in the adjustment because the bias current also has an influence on the overall frequency response. Refer to "The overall frequency response" and "The bias current adjustment". **Standard value: Less than 2.5%**
Ⓡ Overall frequency response Equipment: * VTVM * AF oscillator * ATT * Test tape (reference blank tape) ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRY for Fe-Cr ··· QZZCRZ for Metal	**Note:** Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response). 1. Test equipment connection is shown in fig. 26. 2. Load reference blank test tape. 3. Set the monitor selector to "source" position. 4. Supply 1 kHz signal from AF oscillator through ATT to LINE IN. 5. Adjust ATT so that input level is −20 dB below standard recording level (standard recording level = 0 VU). 6. At this time, LINE OUT level indicates 0.065 V. 7. Change the monitor selector to "tape" position. 8. Press the record and playback buttons and supply each frequency signals 1 kHz, 30 Hz, 70 Hz, 700 Hz, 6 kHz, 8 kHz, 10 kHz, 13 kHz, 15 kHz and 16 kHz. 9. Measure the tape monitor output level and express in dB the difference between the tape monitor output level of each frequency based on output level of 1 kHz. 10. Make sure that the measured value is within the range specified in the overall frequency response chart. Overall frequency response chart (Normal)  **Fig. 33** Overall frequency response chart (Fe-Cr, CrO_2, Metal)  **Fig. 34**
Adjustment-1	**Adjustment-1 Using bias current** 1. When the frequency response between the middle and high frequency range becomes higher than the standard value, as shown by the solid line in fig. 35 increase the bias current by turning the following VR. Normal ····· VR853 (L-CH), VR854 (R-CH) Fe-Cr ····· VR202 CrO_2 ····· VR203 Metal ····· VR204 2. When it becomes lower, as shown by dotted line, reduce the bias current by turning in the direction opposite to arrow indication.  **Fig. 35** **Note:** 1. For adjustment when the bias current is lower than the standard value use the procedure indicated in adjustment 2, because reducing the bias current beyond this point may worsen the distortion factor. 2. For the method of bias current measurement, refer to "Bias current adjustment" on page 7.
Adjustment-2	**Adjustment-2 Using the peaking coil for recording equalization** When the frequency response is flat in the middle frequency range and makes a sharp rise or drop in the high frequency range, as shown in fig. 36, adjust by turning the following peaking coils. Normal ····· L207 (L-CH), L208 (R-CH) Fe-Cr ····· L205 (L-CH), L206 (R-CH) CrO_2 ····· L203 (L-CH), L204 (R-CH) Metal ····· L201 (L-CH), L202 (R-CH)  **Fig. 36**

ITEM	MEASUREMENT & ADJUSTMENT
Ⓢ Dolby NR circuit Equipment: * VTVM * AF oscillator * ATT * Oscilloscope	**A. Dolby encoder block** 1. Set the Dolby NR selector to "OUT" position. 2. Supply 5kHz signal to LINE IN to obtain −35dB at test point [MO. OUT] on the Dolby encoder circuit board. 3. Then change the Dolby NR selector to "IN" position. 4. Measure the output level at test point [REC OUT]. 5. Confirm that the value at "IN" position is 8dB greater than the value at "OUT" position of Dolby NR selector. **Standard value: +8±0.5dB** 6. If measured value is not within standard, adjust as follows. ① Set the Dolby NR selector to "IN" position. ② Turn VR104 clockwise completely. ③ At this time, adjust VR106 so that the output level at test point [REC OUT] becomes −25dB. ④ Then adjust VR104 so that the output level at test point [REC OUT] becomes −27dB. **B. Dolby decoder block** 1. Set the Dolby NR selector to "OUT" position. 2. Supply 5kHz signal to test point [L. T. P] and [R. T. P] on the playback EQ AMP circuit board and adjust ATT to obtain −27dB at test point [MO. OUT] on the Dolby decoder circuit board. 3. Then change the Dolby NR selector to "IN" position. 4. Measure the output level at test point [MO. OUT]. 5. Confirm that the value at "IN" position is 8dB smaller than the value at "OUT" position of Dolby NR selector. **Standard value: −8±0.5dB** 6. If measured value is not within standard, adjust as follows. ① Set the Dolby NR selector to "IN" position. ② Turn VR103 counterclockwise. ③ At this time, adjust VR105 so that the output level at test point [MO. OUT] becomes −37dB. ④ Then adjust VR103 so that the output level at test point [MO. OUT] becomes −35dB.
Ⓣ Overall S/N ratio Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Test tape ··· QZZCRX (reference blank tape)	1. Test equipment connection is shown in fig. 26. 2. Set the monitor selector to tape position and tape selector to CrO_2 position. 3. Load reference blank test tape (QZZCRX). 4. Press the record and playback buttons. 5. Supply 1kHz signal to LINE IN and adjust ATT so that tape monitor output level at LINE OUT indicates 0.65V. 6. Then, disconnect input plug to LINE IN. 7. Measure tape monitor output signal levels of 1kHz and no signal level (noise), and determine the ratio in decibels (dB). 8. The value is difference between "Playback S/N and overall S/N", but for decibel calculation refer to "Playback S/N measurement" on page 6. **Standard value: Greater than 45dB (without NAB filter)**
Ⓤ Test oscillator	**Test oscillation level** 1. Set the input selector to "400Hz/8kHz" position. and monitor selector to "source" position. 2. Press the record and pause buttons. 3. Measure the output level of LEFT (400Hz) and RIGHT (8kHz) channels at LINE OUT. **Standard value: Same level** 4. If output levels are not same, adjust VR3.

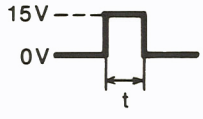
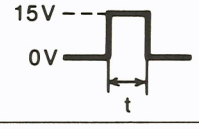
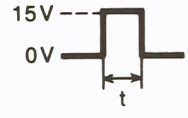
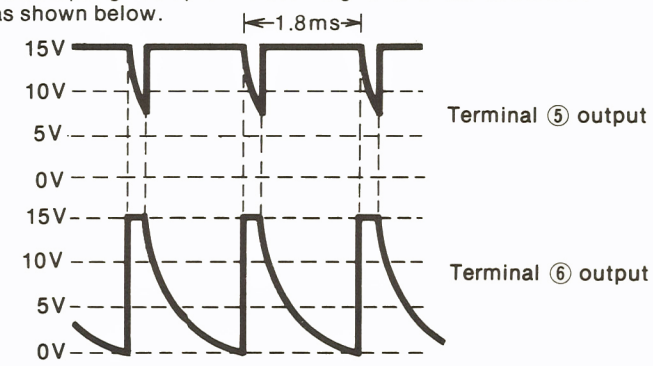
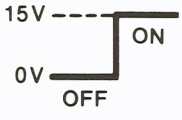
ADJUSTMENT PARTS LOCATION

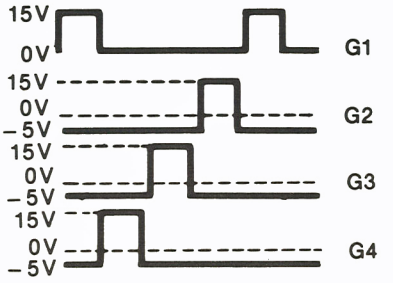
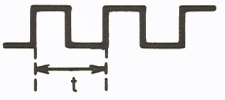
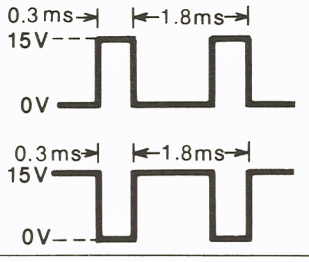




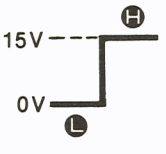


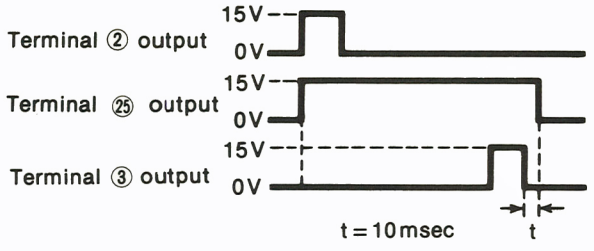
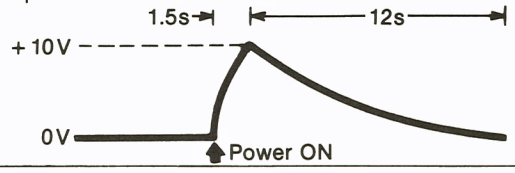
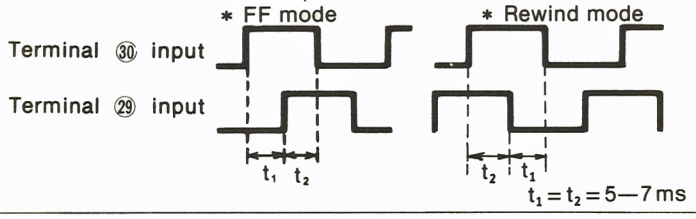
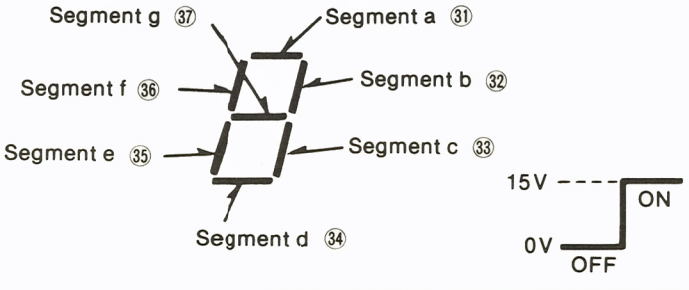
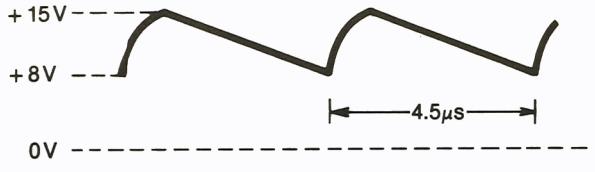
MICROCOMPUTER TERMINAL OPERATION TABLE

Terminal No.	Symbol	Name	Function/Operation
①	VSS		• Power 15V ± 0.5V
②	CO11	C-port output	• Emits Play operation signal in memory PLAY mode. Emits temporary PLAY operation signal for focusing stop in memory STOP mode.  t = 0.1—1 msec
③	CO10	C-port output	• Emits STOP operation signal in memory PLAY, memory STOP, and AUTO STOP modes.  t = 0.6—1 msec
④	CO9	C-port output	• Emits REW operation signal in memory REW mode.  t = 0.6—1 msec
⑤ ⑥	CO8 CO7	C-port output	• The output gives dynamic scan signal to S1003 and S1004 as shown below. 
⑦ ⑧ ⑨	CO6 CO5 CO4	C-port output	• Emits the signals to indicate M1, MP, M2 on the digital counter. Terminal ⑦ ....for M2 Terminal ⑧ ....for MP Terminal ⑨ ....for M1 

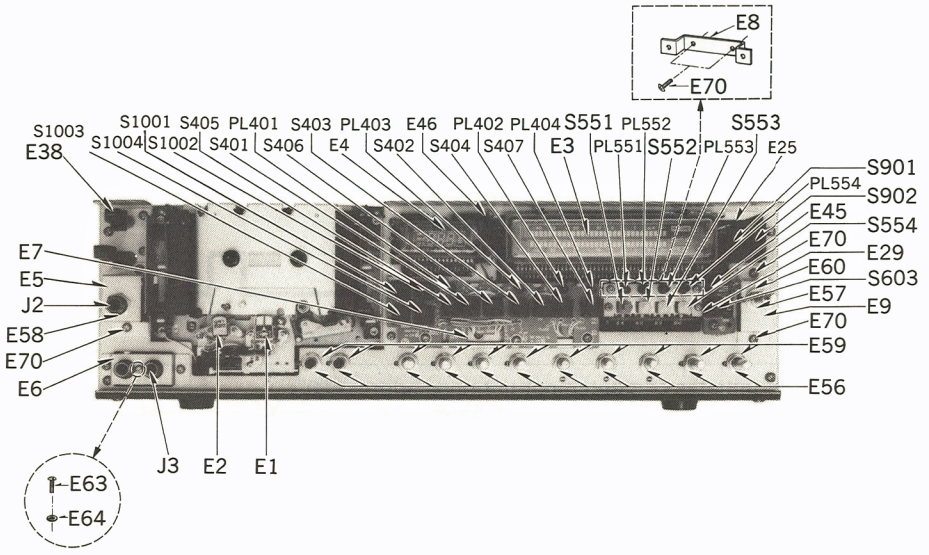
Terminal No.	Symbol	Name	Function/Operation
⑩ ⑪ ⑫ ⑬	CO3 CO2 CO1 CO0	C-port output	• Sends scan signal to each grid of digital counter to turn on grids G1—G4 Terminal ⑩ output Terminal ⑪ output Terminal ⑫ output Terminal ⑬ output 
⑭ ⑮ ⑯ ⑰	AI3 AI2 AI1 AI0	A-port input	• Reads in each control mode of REW, FF, PLAY, REC. Terminal ⑭ input..... Ⓗ in REW mode Terminal ⑮ input..... Ⓗ in FF mode Terminal ⑯ input..... Ⓗ in PLAY mode Terminal ⑰ input..... Ⓗ in REC mode * Ⓗ Level = +15V
⑱	BI3	B-port input	• Reads in 0.94Hz signal (about 1sec. interval) from strobo illumination divider circuit to use it as the reference interval for take-up tension control.  t = 1.06sec
⑲	BI2	B-port input	• With memory switch S1003 or S1004 pressed, it reads in scan signal from terminal (5) or (6) to check the status of control of S1003 and S1004. With S1003 pressed With S1004 pressed 
⑳ ㉑	BI1 BI0	B-port input	• With memory switches S1001 and S1002 pressed, it reads in Ⓗ signal. Terminal ⑳ input.....S1002 Terminal ㉑ input.....S1001 t = switch pressing time
㉒ ㉓	EO0 EO1	E-port output	• Sends 2-bit tension control signal to the reel motor drive circuit. At start of PLAY, terminal ㉒ output is Ⓗ and ㉓ output is Ⓛ for 15sec. irrespective of tape winding diameter. After that, signals shown below are emitted according to the tape diameter.

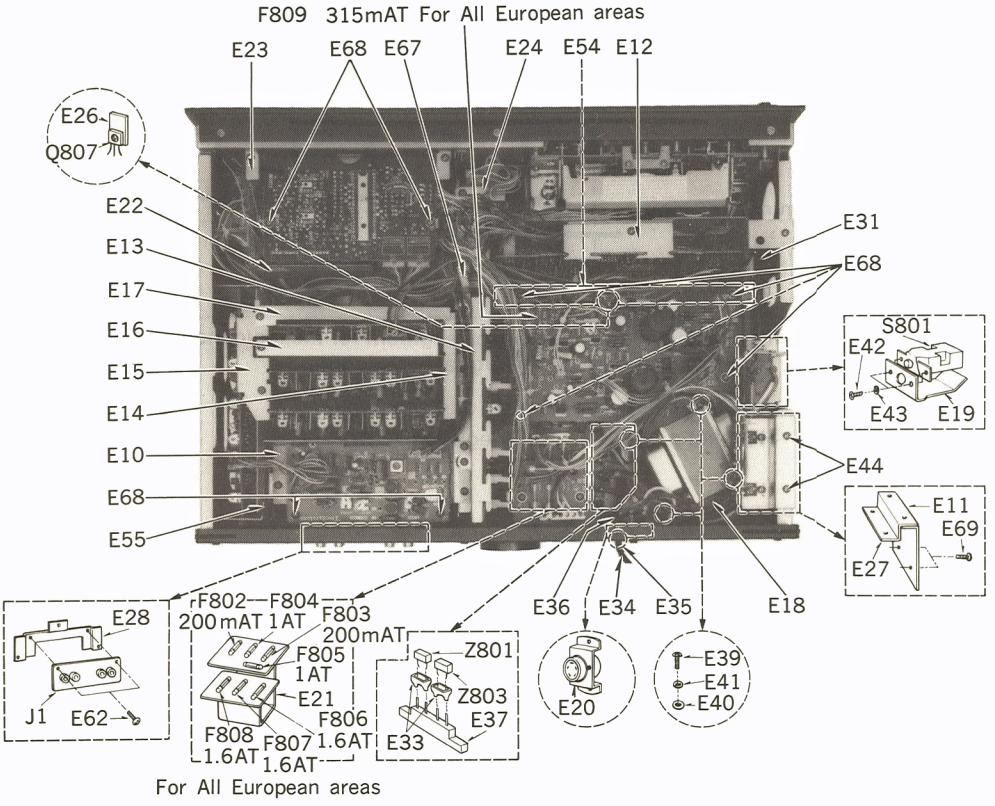
Tape travel	㉒	㉓	Motor torque
Start	Ⓗ	Ⓗ	Low
↓	Ⓗ	Ⓛ	↓
↓	Ⓛ	Ⓗ	↓
End	Ⓛ	Ⓛ	High



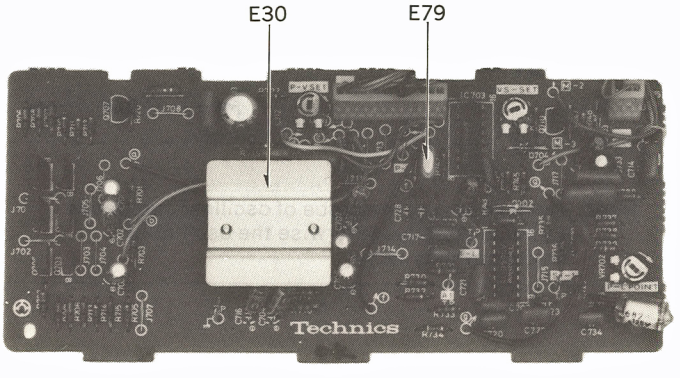
Terminal No.	Symbol	Name	Function/Operation
㉕	EO3	E-port output	• Delivers an output, to ground the signal going to LINE OUT, for muting purposes during focusing of memory STOP (M1, M2). 
㉗	RST	Reset	• Initiates computer instruction at address "0". 
㉙ ㉚	SNS0 SNS1	Sense input	• Reads in the rotational state of reel table from hall IC output in order to obtain the following functions. Functions: Tape tension control. Digital counter indication (tape travel) Full auto stop. 
㉛ ㉜ ㉝ ㉞ ㉟ ㊱ ㊲	DO0 DO1 DO2 DO3 DO4 DO5 DO6	D-port output	• Emits the signal to activate each segment for the indication of tape travel amount on the digital tape counter. Relationship between terminal and segment. 
㊵	OSC	Oscillation input	• This is the control terminal of oscillation circuit for producing the clock signal on which the computer operation is based.  Note: Do not connect the probe of oscilloscope to this terminal directly, otherwise the oscillation frequency may vary.

ELECTRICAL PARTS LOCATION

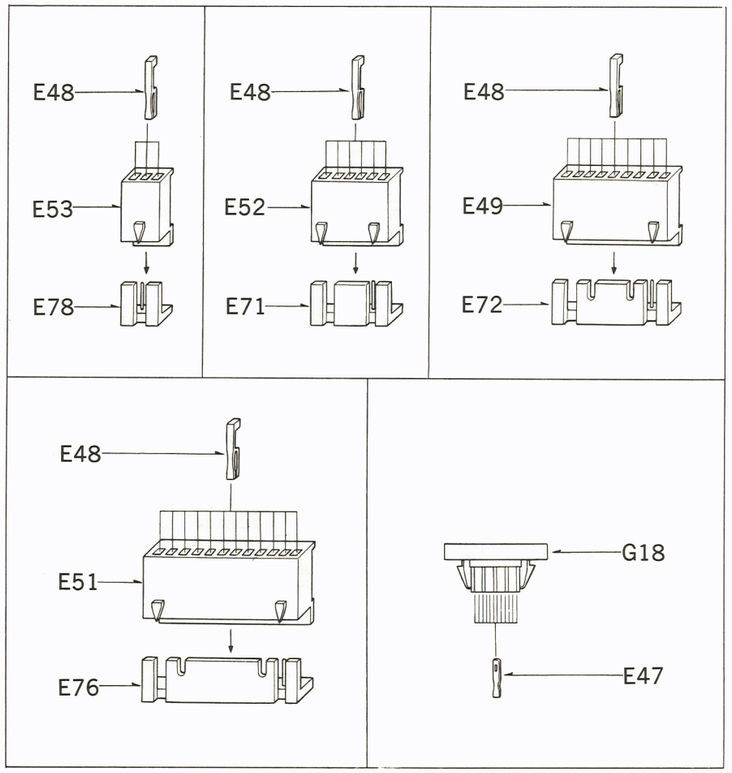


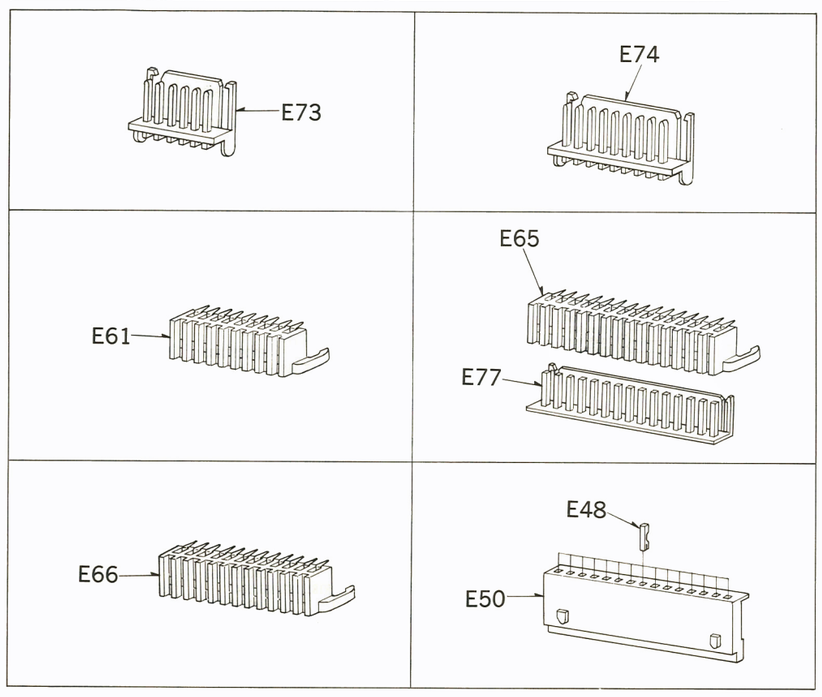


For All European areas



Ref. No.	Part No.	Part Name & Description
		ELECTRICAL PARTS
E1	WY1403Z	Combination Head (Record/Playback)
E2	QWY2137Z	Erase Head
E3	QSLS005RF	Fluorescent Level Meter
E4	QZE0027	Digital Tape Counter
E5	QMA3623	Headphones Jack Angle
E6	QMA3624	Microphone Jack Angle
E7	QMA3627	Circuit Board Angle
E8	QMA3626	Switch Angle-B
E9	QMA3625	Volume Angle
E10	QMA3682	Circuit Board Angle
E11	QTH1145	Heat Sink-A
E12	QMA3643	Motor Circuit Board Angle-B
E13	QMA3638	Control Circuit Board Angle
E14	QMA3640	Dolby NR Circuit Board Angle
E15	QMA3639	Record Circuit Board Angle
E16	QTS1457	Shield Plate
E17	QTS1472	Shield Plate-A
E18	QMA3635	Transformer Angle
E19	QMA3637	Switch Angle
E20	QMA2885	AC Power Voltage Select Switch Angle
E21 DB	QMA3804	Fuse Angle
※For All European areas.		
E22	QMA3629	Meter Angle-A
E23	QMA3630	Meter Angle-B
E24	QMA3641	Circuit Board Angle-A
E25	QMH2045	Meter Holding Angle
E26	QTH1118	Heat Sink
E27	QTH1146	Heat Sink-B
E28	QMA3300	Jack Board Angle
E29	QMA3628	Switch Angle-A
E30	QTH1136	Heat Sink
E31	QXR0441	Push Button Assembly
E33	QTW1118	Spark Killer Cover
E34 D	QFC1204M	AC Power Cord
※For All European areas except United Kingdom.		
B	QFC1205M	〃
※For United Kingdom.		
A	QFC1208M	〃
※For Australia.		
E35	QBJ1425	Cord Bushing
E36	QTD1164	Cord Clamper
E37	QJT4017	4 Pin Terminal
E38	QKJ0242	Cap
E39	XSN4+8S	Screw ⊕4×8
E40	XWA4B	Washer
E41	XWG4	〃
E42	XSN3+5S	Screw ⊕3×5
E43	XWA3B	Washer
E44	XTN3+8B	Tapping Screw ⊕3×8
E45	QMH2043	LED Holder
E46	QMH2044	Counter Holder
E47	QJT1053	Contact-A
E48	QJT1054	Contact-B
E49	QJS1923TN	9 Pin Connector
E50	QJS1925TN	15 Pin Connector
E51	QJS1924TN	12 Pin Connector
E52	QJS1922TN	6 Pin Connector
E53	QJS1921TN	3 Pin Connector
E54	QMA3636	Circuit Board Angle
E55	QMA3633	Shield Angle
E56	QNQ1004	Nut 8φ
E57	QNQ1039	Nut 9φ
E58	QNQ1070	Nut 12φ
E59	QWQ2002	Washer 8φ
E60	QWQ1133	Washer 9φ
E61	QJS1923TNL	9 Pin Connector
E62	XSN3+6S	Screw ⊕3×6
E63	XSN3+5S	Screw ⊕3×5
E64	XWA3B	Washer
E65	QJP1925TNL	15 Pin Plug
E66	QJP1924TNL	12 Pin Plug
E67	QTD1250XN	Cord Clamper
E68	XTW3+8B	Tapping Screw ⊕3×8
E69	XSS3+5S	Screw ⊕3×5
E70	XTN3+6B	Tapping Screw ⊕3×6
E71	QJP1922TN	6 Pin Post
E72	QJP1923TN	9 Pin Post
E73	QJP1922TNL	6 Pin Post
E74	QJP1923TNL	9 Pin Post
E75	XSN3+20S	Screw ⊕3×20
E76	QJP1924TN	12 Pin Post
E77	QJP1925TN	15 Pin Post
E78	QJP1921TN	3 Pin Post
E79	QZE0012	Crystal

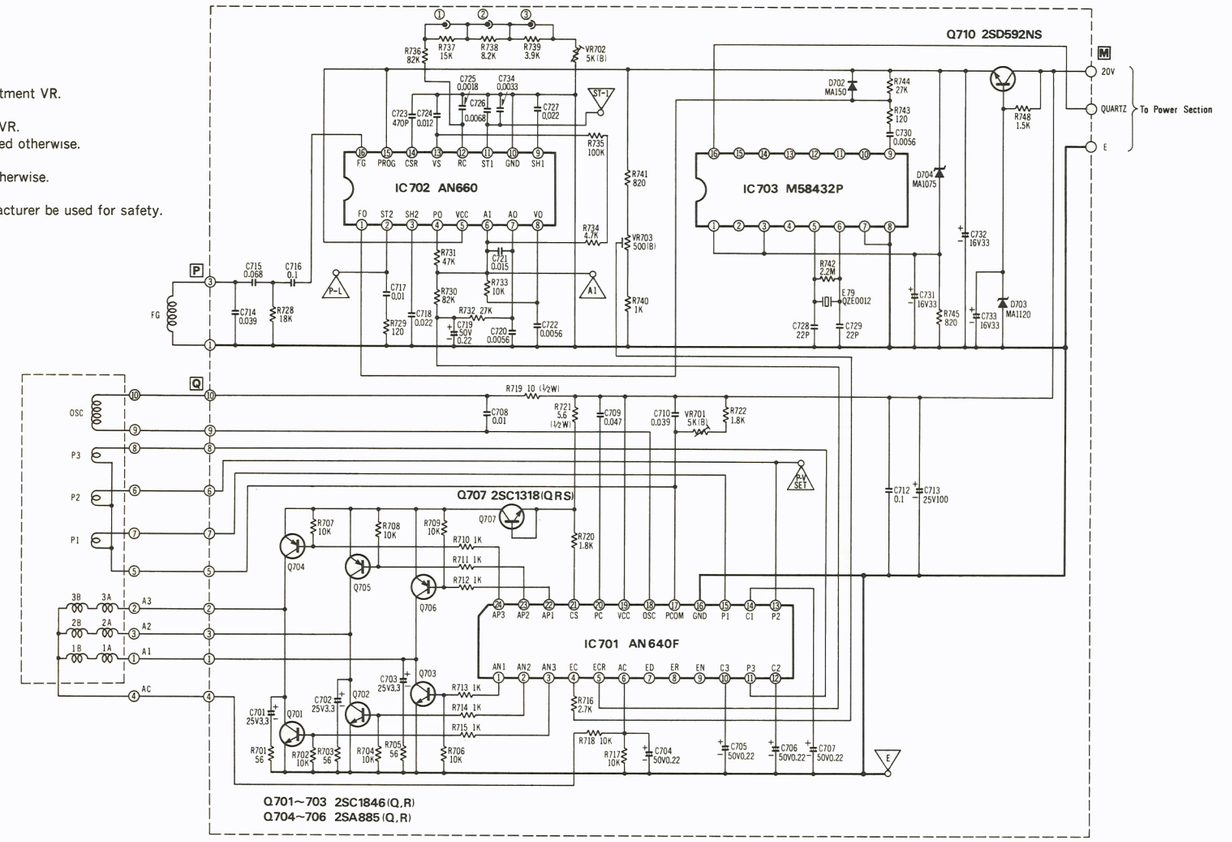




NOTE:

1. VR701·····Position detection coil output level adjustment VR.
2. VR702·····Phase lock point adjustment VR.
3. VR703·····Standard DC power voltage adjustment VR.
4. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000Ω.
5. Capacity are in microfarads (μF) unless specified otherwise. P=Pico-farads.
6. ⚠ indicates that only parts specified by the manufacturer be used for safety.

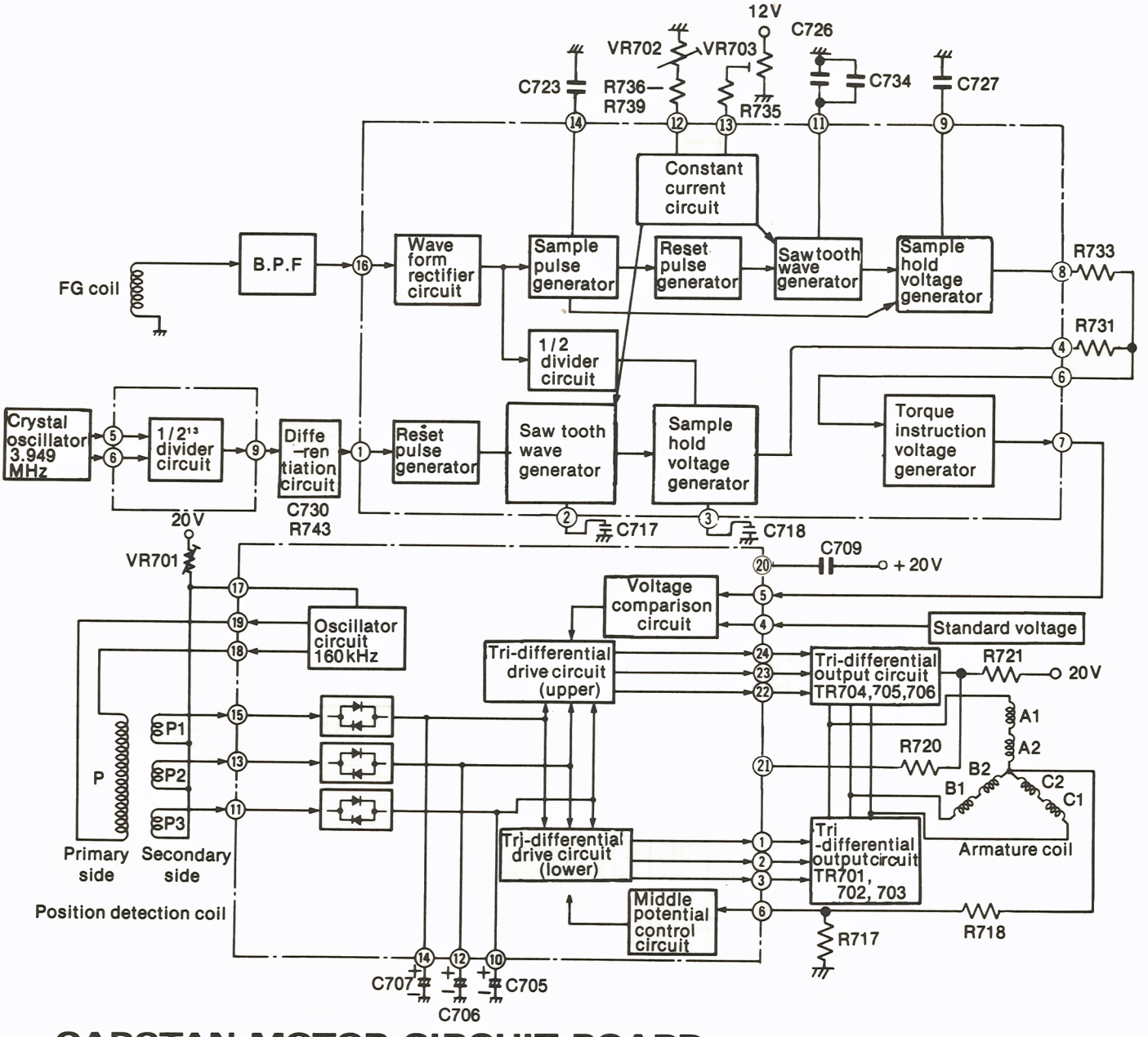
Capstan Motor Section



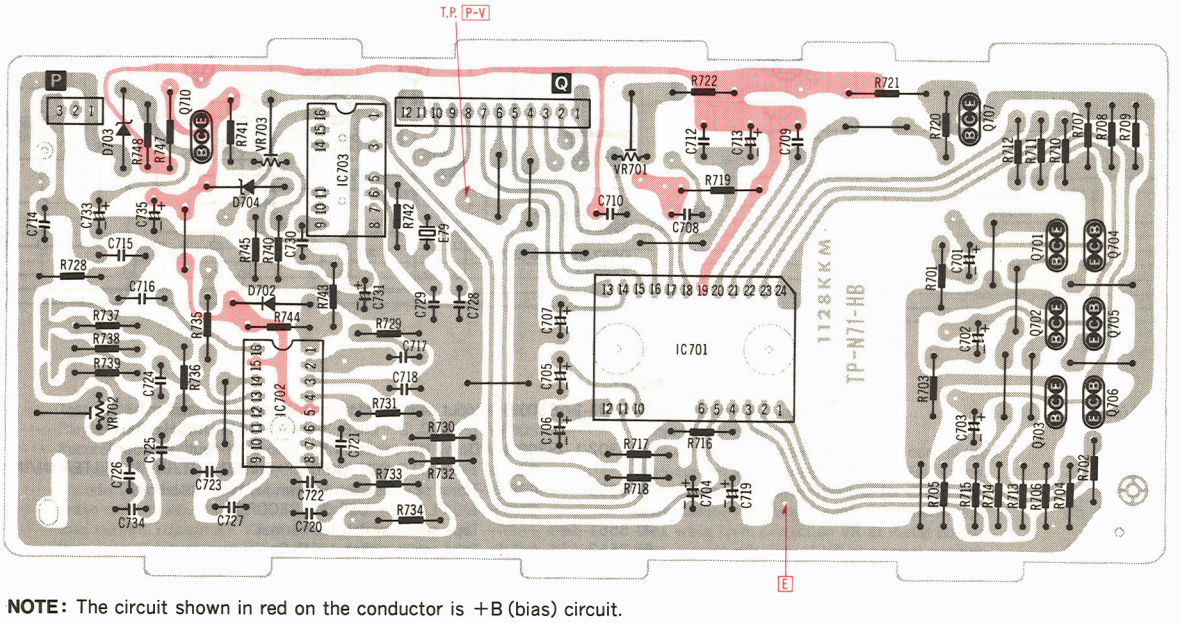
WAVE FORM IC703 and IC702 (CAPSTAN MOTOR SECTION)

Terminal No.	Measured Wave Form	Terminal No.	Measured Wave Form	Terminal No.	Measured Wave Form
IC703 5, 6	around 4.2V → Crystal signal	IC702 16	around 6V → FG signal	IC702 3,4	around 5V →
IC703 9	around 5V → / around 0V → 2ms	IC702 14	around 8V → / around 0V → 1ms	IC702 6	around 6.5V →
IC702 1	around 12V → / around 7V →	IC702 11	around 6V → / around 0V →	IC702 7	around 7.4V →
IC702 2	around 3V → / around 1.4V →	IC702 9	around 6.4V →	IC702 8	around 6.6V →

BLOCK DIAGRAM (CAPSTAN MOTOR SECTION)



CAPSTAN MOTOR CIRCUIT BOARD

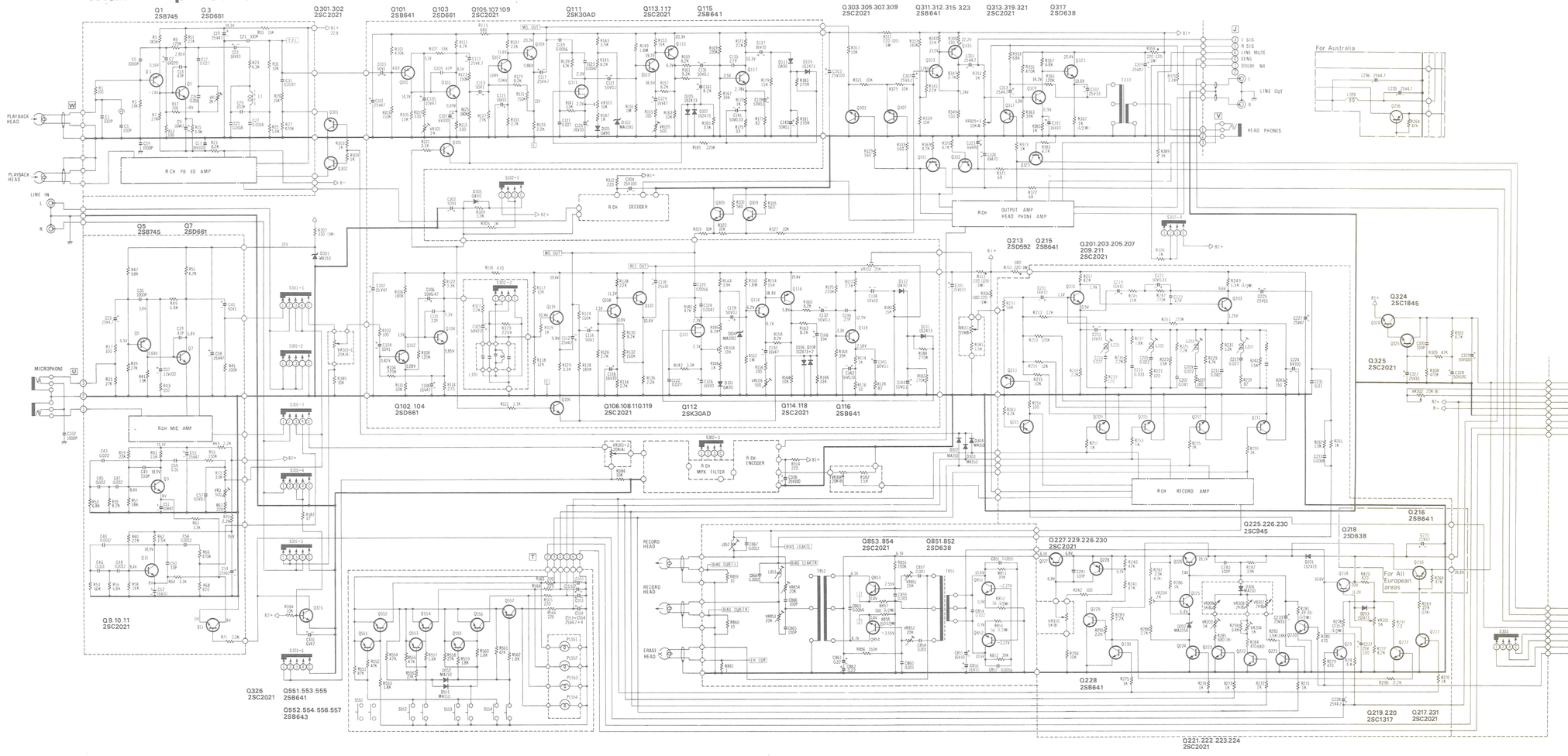


NOTE: The circuit shown in red on the conductor is +B (bias) circuit.

RS-M95

SCHEMATIC DIAGRAM

Main Amp Section



NOTE:

1. S301-1～S301-6·····Input select switch (shown in "mic" position)
   1···MIC, 2···LINE, 3···400Hz, 4···400Hz/8kHz
2. S302-1～S302-4·····Dolby NR select switch (shown in "out" position)
   1···FILTER OUT/OUT, 2···FILTER OUT/IN, 3···FILTER IN/IN.
3. S303·····Timer select switch (shown in "play" position)
   1···PLAY, 2···OFF, 3···RECORD
4. S551·····Tape select switch for normal.
5. S552·····Tape select switch for Fe-Cr.
6. S553·····Tape select switch for CrO_2.
7. S554·····Tape select switch for metal.
8. VR1, 2·····Playback equalizer adjustment VR at 400Hz.
9. VR3·····Test oscillator level adjustment VR at 400Hz.
10. VR101·····Playback gain adjustment VR.
11. VR102·····Record gain adjustment VR.
12. VR103, 105·····Decoder (Playback DOLBY) adjustment VR.
13. VR104, 106·····Encoder (Record DOLBY) adjustment VR.
14. VR201·····Erase current adjustment VR at metal position.
15. VR202·····Bias current adjustment VR at Fe-Cr position.
16. VR203·····Bias current adjustment VR at CrO_2 position.
17. VR204·····Bias current adjustment VR at Metal position.
18. VR301·····Input level control.
19. VR302·····Meter light control.
20. VR303, 304·····Record calibration control.
21. VR305·····Output level control.
22. VR307·····Bias current adjustment control for normal tape.
23. VR308·····Bias current adjustment control for Fe-Cr tape.
24. VR309·····Bias current adjustment control for CrO_2 tape.
25. VR310·····Bias current adjustment control for metal tape.
26. VR851, 852·····Bias wave form correction VR at metal position.
27. VR853, 854·····Bias current adjustment VR at normal position.
28. L201, 202·····Record equalizer adjustment coil for CrO_2 tape.
29. L203, 204·····Record equalizer adjustment coil for Fe-Cr tape.
30. L205, 206·····Record equalizer adjustment coil for metal tape.
31. L207, 208·····Record equalizer adjustment coil for normal tape.
32. L851, 852·····Bias leakage adjustment coil.
33. The resistance ( ) show for Australia.
34. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise
    K=1,000Ω.
35. Capacity are in microfarads (μF) unless specified otherwise.
    P=Pico-farads.
36. All voltage values shown in circuitry are under no signal condition with volume control at minimum position.

NOTE: RESISTORS
ERD···Carbon
ERG···Metal-oxide
ERO···Metal-film
ERX···Metal-film
ERQ···Fuse type metallic
ERC···Solid
ERF···Cement

CAPACITORS
ECQ□·····Ceramic
ECK□·····Ceramic
ECC□·····Ceramic
ECF□·····Ceramic
ECQM·····Polyster
ECQE·····Polyster
ECQF·····Polypropylene
ECE□·····Electrolytic
ECE□N···Non polar electrolytic
ECQS·····Polystyrene
ECS□·····Tantalum

RESISTORS

Ref. No.	Part No.
R1, 2	ERD25TJ101
R3, 4	ERD25TJ333
R5, 6	ERD25TJ184
R7, 8	ERD25TJ273
R9, 10	ERD25TJ124
R11, 12	ERD25TJ223
R13, 14	ERD25TJ101
R15, 16	ERD25TJ392
R17, 18	ERD25TJ101
R19, 20	ERD25TJ332
R21, 22	ERD25TJ822
R23, 24	ERD25TJ472
R25, 26	ERD25TJ562
R27, 28	ERD25TJ474
R29, 30	ERD25TJ153
R31, 32	ERD25TJ103
R33, 34	ERD25TJ153
R35, 36	ERD25TJ273
R37, 38	ERD25TJ101
R39, 40	ERD25TJ273
R41, 42	ERD25TJ153
R43, 44	ERD25TJ101
R45, 46	ERD25TJ104
R47, 48	ERD25TJ683
R49, 50	ERD25TJ682
R51, 52	ERD25TJ472
R53	ERD25TJ682
R54	ERD25TJ562
R55	ERD25TJ822
R56	ERD25TJ682
R57, 58	ERD25TJ183
R59, 60	ERD25TJ223
R61, 62	ERD25TJ152
R63, 64	ERD25TJ332
R65	ERD25TJ154
R66	ERD25TJ474
R67	ERD25TJ221
R68	ERD25TJ821
R69, 70, 71	ERD25TJ222
R72	ERD25TJ392
R101	ERD25TJ474
R102	ERD25TJ101
R103	ERD25TJ154
R104	ERD25TJ224
R105	ERD25TJ153
R106	ERD25TJ184
R107	ERD25TJ333
R108	ERD25TJ124
R109	ERD25TJ331
R110	ERD25TJ332
R111	ERD25TJ472
R112	ERD25TJ332
R113	ERD25TJ331
R114	ERD25TJ271
R115	ERD25TJ681
R116	ERD25TJ471
R117	ERD25TJ103
R118	ERD25TJ123
R119	ERD25TJ102
R120, 121, 122	ERD25TJ332
R123, 124	ERD25TJ154
R241, 242	ERD25TJ152
R243, 244	ERD25TJ151
R245, 246	ERD25TJ103
R247, 248	ERD25TJ274
R249, 250	ERD25TJ152
R251, 252	ERD25TJ101
R253, 254, 259, 260	ERD25TJ102
R261, 262	ERD25TJ224
R263, R264	ERD25TJ472, ERD25TJ473

Ref. No.	Part No.
R265, 266	ERD25TJ102
R267, 268	ERD25TJ152
R269	ERD25TJ273
	ⓐ ERD25TD223
※For All European areas.	
※For Australia.	
R270, 271, 272, 273, 274, 275	ERD25TJ102
R276	ERD25TJ821
R277	ERD25TJ822
R278	ERQ12HJ120
※For All European areas.	
	ⓐ ERD25TJ150
※For Australia.	
R279, 280	ERD25TJ471
R281	ERQ12HJ390
※For All European areas.	
	ⓐ ERD25TJ150
※For Australia.	
R282	ERD25TJ332
R125	ERD25TJ184
R126, 127	ERD25TJ273
R128	ERD25TJ184
R129, 130	ERD25TJ822
R131, 132	ERD25TJ154
R133, 134	ERD25TJ272
R135, 136	ERD25TJ222
R137, 138	ERD25TJ223
R139, 140	ERD25TJ473
R141, 142	ERD25TJ332
R143, 144	ERD25TJ392
R145, 146	ERD25TJ822
R147, 148	ERD25TJ102
R149, 150	ERD25TJ185
R151, 152	ERD25TJ105
R153, 154	ERD25TJ153
R155, 156	ERD25TJ101
R157, 158, 159, 160, 161, 162	ERD25TJ822
R163, 164	ERD25TJ103
R165, 166	ERD25TJ333
R167, 168	ERD25TJ333
R169, 170	ERD25TJ154
R171, 172	ERD25TJ272
R173, 174	ERD25TJ102
R175, 176	ERD25TJ330
R177, 178	ERD25TJ820
R179, 180	ERD25TJ153
R181, 182, 183, 184	ERD25TJ270
R185, 186	ERD25TJ224
R187	ERD25TJ123
R201, 202	ERD25TJ563
R203, 204	ERD25TJ124

Ref. No.	Part No.
R205, 206, 209, 210	ERD25TJ103
R211, 212	ERD25TJ154
R213, 214	ERD25TJ223
R215, 216	ERD25TJ103
R217, 218	ERD25TJ823
R219, 220	ERD25TJ222
R221, 222	ERD25TJ121
R223, 224	ERD25TJ152
R225, 226	ERD25TJ222
R227, 228	ERD25TJ181
R229, 230	ERD25TJ472
R231, 232	ERD25TJ122
R233, 234	ERD25TJ121
R235, 236	ERD25TJ152
R237, 238	ERD25TJ152
R239, 240	ERD25TJ820
R283	ERD25TJ152
R284	ERD25TJ471
※For All European areas.	
	Ⓐ ERD25TJ681
※For Australia.	
R285	ERD25TJ102
※For Australia.	
R286	ERD25TJ102
R287	ERD25TJ392
※For All European areas.	
	Ⓐ ERD25TJ472
※For Australia.	
R288	ERD25TJ272
R289	ERD25TJ222
R290, 291	ERD25TJ473
R292	ERD25TJ101
R293	ERD25TJ103
R294	ERD25TJ472
R295, 296, 297	ERD25TJ222
R298	ERD25TJ682
R301, 302	ERD25TJ473
R303, 304, 305, 306	ERD25TJ102
R307	ERG1WJ331
R308	ERD25TJ474
R309	ERD25TJ473
R310	ERD25TJ472
R311, 312, 313, 314	
	ⓐⓑ ERG1ANJ221
※For All European areas.	
	Ⓐ ERG1ANJ121
※For Australia.	
R315, 316	
	ⓐⓑ ERG1ANJ221
※For All European areas.	
	Ⓐ ERG1ANJ181
※For Australia.	
R317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328	ERD25TJ103
R329, 330, 331, 332, 333, 334, 335, 336	ERD25TJ561
R337, 338	ERD25TJ184
R339, 340	ERD25TJ153
R341, 342	ERD25TJ273
R343, 344	ERD25TJ153
R345, 346	ERD25TJ331

NOTE: ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.
R347, 348	ERD25TJ272
R349, 350	ERD25TJ331
R351, 352	ERD25TJ102
R353, 354	ERD25TJ683
R355, 356	ERD25TJ474
R357, 358	ERD25TJ682
R359, 360	DB ERG1ANJ221
※For All European areas.	
A ERG1ANJ121	
※For Australia.	
R361, 362	ERD25TJ124
R363, 364	ERD25TJ393
R365, 366	ERD25TJ102
R367, 368	ERG12ANJ102
R369, 370	ERD25TJ472
R371, 372	ERD25TJ680
R373, 374	ERD25TJ102
R375, 376	ERD25TJ332
R377, 378	ERD25TJ222
R379, 380	ERD25TJ224
R381, 382	ERD25TJ152
R383	ERD25TJ472
R384, 385, 386	ERD25TJ103
R387	ERD25TJ470
R388	ERD25TJ332
R389	ERD25TJ102
R401	ERD25TJ562
R402	ERD25TJ101
R403	ERD25TJ562
R404	ERD25TJ101
R405	ERD25TJ562
R406	ERD25TJ101
R407	ERD25TJ562
R408	ERD25TJ101
R409	ERD25TJ562
R410	ERD25TJ101
R411	ERD25TJ562
R412	ERD25TJ101
R414	ERD25TJ331
R415	ERD25TJ272
R416	ERD25TJ332
R418	ERD25TJ272
R419, 421	ERD25TJ332
R422	ERD25TJ272
R423, 424, 425	ERD25TJ473
R426, 428, 429, 430	ERD25TJ273
R431	ERD25TJ153
R433, 434	ERD25TJ473
R435	ERD25TJ562
R436	ERD25TJ103
R437	ERD25TJ473
R438	ERD25TJ183
R439	ERD25TJ681
R440	ERD25TJ153
R441, 442	ERD25TJ562
R443	ERD25TJ473
R444	ERD25TJ103
R445	ERD25TJ331
R446	ERD25TJ153
R447, 448	ERD25TJ331
R449	ERD25TJ473
R450	ERD25TJ103
R451, 453	ERD25TJ473
R454	ERD25TJ273
R455	ERD25TJ821
R456	ERD25TJ473
R457	ERD25TJ472
R459	ERD25TJ102
R460	ERD25TJ394
R461	ERD25TJ101
R462	ERD25TJ334
R463	ERD25TJ101
R464	ERD25TJ473
R465	ERD25TJ562
R466, 467	ERD25TJ101
R468	ERG12ANJ562
R469	ERG12ANJ153
R470, 471	ERD25TJ473
R472	ERD25TJ153
R473	ERD25TJ562
R474	ERD25TJ473
R475	ERD25TJ562
R476	ERD25TJ224
R478, 479	ERD25TJ471
R482	ERD25TJ473
R483	ERD25TJ272
R484	ERD25TJ473
R485	ERD25TJ102
R486	DB ERQ12HJ180
※For All European areas.	
A ERD25TJ270	
※For Australia.	
R487	ERD25TJ102
R488	ERD25TJ153
R489	ERD25TJ471
R490	ERD25TJ473
R491	ERD25TJ471
R492	ERD25TJ392
R493	ERD25TJ123
R494	ERD25TJ472
R495	ERD25TJ473
R496	ERD25TJ102
R497	ERD25TJ104
R498	ERD25TJ153
R505	ERD25TJ332
R506	ERD25TJ102
R507	ERD25TJ473
R508	ERD25TJ102
R509	ERD25TJ562
R510	ERG12ANJ222
R511	ERD25TJ471
R512	ERD25TJ182
R513	ERD25TJ821
R514	ERD25TJ122
R515	ERD25TJ101
R516	ERD25TJ153
R517	ERD25TJ473
R518	ERD25TJ124
R519	ERD25TJ474
R551	ERD25TJ473
R552	ERD25TJ273
R553	ERD25TJ182
R554, 555	ERD25TJ473
R556	ERD25TJ273
R557	ERD25TJ182
R558	ERD25TJ473
R559	ERD25TJ273
R560	ERD25TJ182
R561	ERD25TJ473
R562	ERD25TJ182
R563, 564, 565, 566	ERD25TJ221
R601	ERD25TJ2R2
R604	ERD25TJ2R2
R605	ERD25TJ392
R606	ERD25TJ222
R607	ERD25TJ392
R609	ERD25TJ221
R612	ERD25TJ562
R613, 614	ERD25TJ104
R615	ERD25TJ102
R616	ERD25TJ333
R617	ERD25TJ152
R618	ERD25TJ681
R621	ERD25TJ102
R622	ERD25TJ2R2
R632, 634	ERD25TJ473
R635	ERD25TJ682
R636	ERD25TJ153
R637	ERG1ANJ271
R638	ERD25TJ562
R639	ERD25TJ682
R640	ERD25TJ153
R641	ERG1ANJ271
R642	ERD25TJ562
R643	ERD25TJ103
R644	ERG12ANJ181
R645	ERD25TJ272
R646	ERD25TJ103
R647	ERG12ANJ181
R648	ERD25TJ272
R649	ERD25TJ473
R650, 651	DB ERD25TJ472
※For All European areas.	
R661	ERD25TJ473
R662	ERD25TJ101
R663, 664	ERD25TJ273
R665	ERD25TJ332
R666	ERD25TJ272
R667	ERD25TJ332
R668	ERD25TJ272
R669	ERD25TJ473
R670	ERD25TJ181
R671	ERD25TJ473
R672	ERD25TJ181
R673, 674	ERD25TJ273
R675, 676	ERD25TJ331
R677	ERD25TJ473
R678	ERD25TJ103
R679, 680	ERD25TJ472
R681	ERD25TJ681
R701	ERD25TJ560
R702	ERD25TJ103
R703	ERD25TJ560
R704	ERD25TJ103
R705	ERD25TJ560
R706, 707, 708, 709	ERD25TJ103
R710, 711, 712, 713, 714, 715	ERD25TJ102
R716	ERD25TJ272
R717, 718	ERD25TJ103
R719	ERG12ANJ100
R720	ERD25TJ182
R721	ERX12ANJ5R6
R722	ERD25TJ182
R728	ERD25TJ183
R729	ERD25TJ121
R730	ERD25TJ823
R731	ERD25TJ473
R732	ERD25TJ272
R733	ERD25TJ103
R734	ERD25TJ472
R735	ERD25TJ104
R736	ERO25CKF8202
R737	ERD25TJ153
R738	ERD25TJ822
R739	ERD25TJ392
R740	ERD25TJ102
R741	ERD25TJ821
R742	ERD25TJ225
R743	ERD25TJ121
R744	ERD25TJ273
R745	ERD25TJ821
R748	ERD25TJ152
R801	ERD25TJ563
R802 A	ERG12ANJ120
※For Australia.	
R803	DB ERQ12HJ150
※For All European areas.	
A ERG1ANJ150	
※For Australia.	
R804	ERX1ANJ2R2
R805	ERD25TJ103
R806	ERD25TJ102
R807	ERD25TJ101
R808	ERD25TJ272
R809	ERD25TJ103
R810	ERD25TJ562
R811	DB ERQ12HJ180
※For All European areas.	
A ERG12ANJ180	
※For Australia.	
R812	ERD25TJ821
R813	ERD25TJ332
R814	ERD25TJ153
R815	ERD25TJ392
R816	ERD25TJ472
R817	DB ERQ12HJ101
※For All European areas.	
A ERG1ANJ121	
※For Australia.	
R818	ERD25TJ154
R819	ERD25TJ153
R820	ERG1ANJ471
R821 ⚠	ERX1ANJR47
R822	ERD25TJ101
R823	ERD25TJ123
R824	DB ERD25TJ332
※For All European areas.	
A ERG12ANJ122	
※For Australia.	
R825	DB ERD25TJ471
※For All European areas.	
A ERD25TJ121	
※For Australia.	
R826	DB ERD25TJ332
※For All European areas.	
A ERD25TJ222	
※For Australia.	
R827	DB ERD25TJ152
※For All European areas.	
A ERD25TJ272	
※For Australia.	
R828	ERX2ANJ4R7
R829	ERG12ANJ331
R830	ERD25TJ222
R851, 852	ERD25TJ393
R853, 854	DB ERG12ANJ680
※For All European areas.	
A ERG12ANJ560	
※For Australia.	
R855, 856	ERD25TJ154
R857, 858	DB ERG12ANJ151
※For All European areas.	
A ERD25TJ151	
※For Australia.	
R859, 860	ERD25TJ100
R861	ERD25TJ1R0
R901, 902	ERD25TJ104
R903, 904	ERD25TJ102
R905, 906	ERD25TJ222
R907, 908	ERD25TJ221
R909	ERD25TJ682
R910	ERD25TJ392
R911, 912, 913, 914	ERD25TJ472
R915, 916	ERD25TJ223
R917, 918	ERD25TJ473
R919, 920	ERD25TJ102
R921, 922	ERD25TJ103
R923, 924	ERD25TJ472
R925, 926	ERD25TJ223
R927, 928	ERD25TJ153
R929, 930	ERD25TJ334
R931, 932	ERD25TJ154
R933, 934	ERD25TJ102
R935, 936	ERD25TJ331
R937, 938	ERD25TJ824
R939, 940	ERD25TJ102
R941, 942	ERD25TJ223
R943, 944	ERD25TJ224
R945, 946	ERD25TJ102
R947, 948, 949, 950	ERO25CKF1001
R951, 952	ERD25TJ102
R953, 954	ERD25TJ682
R955, 956	ERO25CKF1001
R957, 958	ERD25TJ122
R959, 960	ERO25CKF8202
R961, 962	ERO25CKF1502
R963, 964	ERD25TJ102
R965	ERD25TJ123
R966	ERD25TJ123
R967, 968	ERD25TJ391
R970	ERD25TJ683
R971	ERD25TJ333
R972	ERD25TJ102
R973, 974, 975	ERD25TJ683
R976	ERD25TJ103
R977	ERD25TJ391
R978, 979	ERD25TJ101
R980, 981	ERD25TJ473
R982	ERD25TJ102
R983	ERD25TJ153
R984, 985, 986	ERD25TJ102
R987	ERD25TJ223
R988	ERD25TJ563
R989	ERD25TJ222
R990	ERD25TJ103
R991	ERD25TJ562
R992	ERD25TJ473
R993	ERD25TJ103
R995	ERD25TJ393
R1001, 1002	ERD25TJ682
R1003, 1004	ERD25TJ473
R1005	ERD25TJ102
R1006, 1007	ERD25TJ182
R1008, 1009	ERD25TJ682
R1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017	ERD25TJ473
R1018	ERD25TJ222
R1019	ERG12ANJ390
R1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033	ERD25TJ473
R1034, 1035, 1036, 1037, 1038, 1039	ERD25TJ153

VARIABLE RESISTORS

VR1, 2	EVNK0AA00B23
VR3	EVNK0AA00B52
VR101	EVNK0AA00B23
VR102	EVNK0AA00B24
VR103, 104	EVNK0AA00B14
VR105, 106	EVNK0AA00B52
VR201, 202, 203	EVNK0AA00B53
VR204	EVNK0AA00B23
VR301	EWKNXAF25A24
VR302	EVHFTA067B24
VR303, 304	EVHS7AS20B24
VR305	EWKH1A033A14
VR307, 308	EVHFSA067B23
VR309, 310	EVHFSA067B53
VR601	EVNK0AA00B14
VR701, 702	EVNK4AA00B53
VR703	EVNK4AA00B52
VR801	EVNK4AA00B53
VR851, 852	EVNK4AA00B24
VR853, 854	EVLS3AA00B24
VR902	EVNK4AA00B53
VR903, 904, 905	EVNK4AA00B52
VR906, 907	EVNK4AA00B14

CAPACITORS

C1, 2	ECQS1331JZ
C3, 4	ECQS1101JZ
C5, 6	ECKD1H102K
C7, 8	ECEA0JS221
C9, 10	ECEA1HS470
C11, 12	ECEA1HS101
C13, 14	ECCD1H470K
C15, 16	ECQM05102KZ
C17, 18	ECQM05273JZ
C19, 20	ECEA1ES470
C21, 22	ECCD1H331K
C23, 24	ECEA1HS100
C25, 26, 27, 28	ECQM05182KZ
C29, 30	ECQS101JZ
C31, 32	ECQM05472KZ
C33, 34	ECEA25M4R7
C35, 36	ECKD1H102K
C37, 38	ECEA1AS101
C39, 40	ECCD1H470K
C41, 42	ECEA50M1
C43	ECQM05223KZ
C44	ECQM05122KZ
C45	ECQM05223KZ
C46	ECQM05122KZ
C47	ECQM05223KZ
C48	ECQM05122KZ
C49	ECCD1H331K
C50	ECCD1H330K
C51	ECEA1AS470
C52	ECEA1HS100
C53	ECEA1ES470
C54	ECEA1HS100
C55	ECQM05103KZ
C56	ECQM05122KZ
C57	ECEA50ZR1
C58	ECEA1ES470
C59	ECKD1H102K
C101, 102	ECEA1ES470
C103	ECEA1HS010
C104	ECEA50MR1R
C105	ECEA1AS470
C106	ECEA50ZR47
C107	ECEA1AS101
C108	ECEA1HS470
C109	ECCD1H470K
C110	ECCD1H220K
C111, 112	ECEA1ES4R7
C113, 114	ECEA50Z1
C115	ECEA1HS100
C116	ECEA1HS330
C117	ECEA1ES4R7
C118	ECEA1ES100
C119, 120	ECQM05562JZ
C121, 122	ECQM05273JZ
C123, 124	ECQM05472JZ
C125, 126	ECEA1HS100
C127, 128	ECEA50MR1R
C129, 130	ECEA1HS470
C131, 132	ECEA50MR1R
C133, 134	ECEA1HS100
C135, 136	ECCD1H270K
C137, 138	ECEA1HS100
C139, 140	ECEA50MR1R
C141, 142	ECEA50MR33R
C143, 144	ECEA50MR1R
C201, 202	ECEA1HS100
C203, 204	ECEA1JS330
C205, 206	ECQM05223KZ
C207, 208	ECQM05473KZ
C209, 210	ECQM05223KZ
C211, 212	ECQM05823KZ
C213, 214	ECQM05223KZ
C215, 216	ECQM05473KZ
C217, 218	ECQM05273KZ
C219, 220	ECEA1HS100
C221, 222	ECEA50ZR33
C223, 224	ECCD1H470K
C225, 226	ECEA1ES100
C227, 228	ECEA1ES470
C229, 230	ECEA1AS101
C231, 232	ECQM05103KZ
C233, 234	ECQM05682KZ
C235	DB ECEA1ES330
※For All European areas.	
A ECEA25Z4R7	
※For Australia.	
C236 A	ECEA25Z4R7
※For Australia.	
C237	ECEA1ES101
C238	ECEA25Z4R7
C239	ECEA1VS330
C240, 241	ECCD1H101K
C302	ECEA1HS470
C303, 304, 305, 306	ECEA1ES101
C307, 308	ECEA1ES4R7
C309, 310	ECEA1HS330
C311, 312, 313, 314	ECEA1ES4R7
C315, 316	ECEA1HS100
C317, 318	ECEA1VS330
C319, 320	ECEA1ES470
C323, 324	ECEA0JS471
C325, 326	ECEA50Z2R2
C327	ECEA1ES330
C328, 329	ECEA1HS101
C330	ECCD1H101K
C331	ECEA0JS470
C332	ECKD1H102K
C401, 402, 403, 404, 405, 406	ECKD1H103ZF
C408	ECEA1HS100
C409	ECKD1H103ZF
C410	ECEA1HS100
C411	ECEA1HS010
C412, 413	ECEA1HS100
C414	ECEA1HS010
C415	ECEA1HS100
C416	ECKD1H103ZF
C418	ECEA16N10
C422	ECEA1HS471
C423	ECKD1H103ZF
C424	ECEA1AS470
C425	ECEA0JS221
C426, 427	ECKD1H103ZF
C428	ECEA1HS100
C429	ECEA1HS330
C430	ECEA1AS470
C431	ECKD1H472KB
C450	ECFWD473MXY
C551, 552, 553, 554	ECEA1ES4R7
C601	ECEA1HS010
C602	ECEA1AS470
C603	ECEA1HS330
C605, 606, 607, 608	ECKD1H103Z
C609	ECEA1AS470

Ref. No.	Part No.
C631, 632	ECEA1HS100
C633	ECEA1HS010
C661	ECEA1AS470
C662, 663, 664, 665	ECFWD104MXY
C666	ECKD1H103ZF
C701, 702, 703	ECEA25Z3R3
C704	ECEA50ZR47
C705, 706, 707	ECEA50ZR22
C708	ECQM05103KZ
C709	ECQM05473KZ
C710	ECQM05393KZ
C712	ECFWD104MXY
C713	ECEA25Z100
C714	ECQM05393KZ
C715	ECQM05683KZ
C716	ECQM05104KZ
C717	ECQM05103KZ
C718	ECQM05223KZ
C719	ECEA50ZR22
C720	ECQM05562KZ
C721	ECQM05153KZ
C722	ECQM05562KZ
C723	ECKD1H471K
C724	ECQM05123KZ
C725	ECQM05182KZ
C726	ECQS1682JZ
C727	ECQM05223KZ
C728, 729	ECCD1H220K
C730	ECQM05562KZ
C731, 732, 733	ECEA1HS330
C734	ECQM05332KZ
C801 △	ECET50R222S
C802 △	ECEA1HS221
C803	ECEA1HS101
C804	ECEA1ES221
C805	ECEA1HS101
C806	ECEA1HS101
C807	ECEA1HS101
C808 △	ECEA1HS222
C809	ECEA1AS101
C810 △	ECET25R472S
C811 △	ECEA1HS222
C813	ECEA1HS221
C814	ECEA1HS010
C815, 816	ECKD1H102K
C817	ECKD1H222K
C851, 852	ECQF6562KZH
C854	ECQF4223KZH
C855, 856	ECEA1HS100
C857, 858, 859, 860	ECQF6102KZH
C861, 862	ECEA50MR22R
C863	ECQF6562KZH
C865, 866	ECQS1121JZ
C867, 868	ECQF6122KZH
C901, 902	ECEA1HS100
C903, 904	ECEA25N3R3
C905	ECEA1ES4R7
C907, 908	ECEA1ES4R7
C909, 910	ECCD1H100KC
C911, 912	ECEA1ES4R7
C913, 914	ECEA1AS470
C915	ECQM05473KZ
C916, 917	ECSZ25EF2R2J
C918, 919	ECKD1H682KB
C1001, 1002	ECEA1HS2R2
C1003	ECCD1H101KC
C1004	ECKD1H102KB
C1005	ECEA1HS2R2

COMBINATION PARTS

Z801	△	QCR0011
Z802	△	B4BC0802
Z803	△	QCR0011

TRANSISTORS

Q1, 2	2SA721
Q3, 4	2SC1327
Q5, 6	2SA721
Q7, 8	2SC1327
Q9, 10, 11	2SC1684
Q101	2SA564
Q102, 103, 104	2SC1327
Q105, 106, 107, 108, 109, 110	2SC1684
Q111, 112	2SK30AD
Q113, 114	2SC1684
Q115, 116	2SA564
Q117, 118, 119	2SC1684
Q201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212	2SC2021SF
Q213, 214	2SC1383
Q215	2SA564
Q216 DB	2SB643
※For All European areas. A	2SA564
※For Australia. Q217	2SC2021SF
Q218 DB	2SC1846
※For All European areas. A	2SC2021FR
※For Australia. Q219, 220	2SC1317
Q221, 222, 223, 224	2SC2021SF
Q225 DB	2SC1846
※For All European areas. A	2SC2021FR
※For Australia. Q226 DB	2SC1383
※For All European areas. A	2SC2021FR
※For Australia. Q227	2SC2021SF
Q228	2SA564
Q229	2SC2021SF
Q230 DB	2SC945P
※For All European areas. A	2SC2021SF
※For Australia. Q231	2SC2021SF
Q301, 302, 303, 304, 305, 306, 307, 308, 309, 310	2SC1684
Q311, 312	2SA564
Q313, 314	2SC1684
Q315, 316	2SA564
Q317, 318, 319, 320, 321, 322	2SC1684
Q323	2SA564
Q324	2SC1846
Q325, 326	2SC1684
Q401, 402, 403	2SA719
Q404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418	2SC1684
Q419	2SA719
Q420, 421, 422, 423, 424, 425, 426, 427, 428, 429	2SC1684
Q430	2SA564
Q431, 432	2SC1684
Q433	2SA564
Q434	2SC1684
Q435	2SA564
Q436, 437	2SC1684
Q551	2SA564
Q552	2SA719
Q553	2SA564
Q554	2SA719
Q555	2SA564
Q556, 557	2SA719
Q601, 602, 603	2SC1317
Q605	2SC1846
Q606	2SC1383
Q607, 608, 609, 610, 611	2SC1684
Q612	2SA886
Q613	2SC1684
Q614	2SA886
Q615, 616	2SC1684
Q617	2SA719
Q618	2SC1684
Q619	2SA719
Q620	2SC1684
Q621, 622	2SA564
Q623, 624, 625, 626, 627	2SC1684
Q628, 629 DB	2SA564
※For All European areas. Q701, 702, 703	2SC1846
Q704, 705, 706	2SA885
Q707	2SC1318
Q710	2SD592NSR
Q801	2SD389P
Q802	2SC2021FR
Q803	2SC1684
Q804	2SD592NCR
Q805	2SC1684
Q806	2SA564
Q807	2SA886
Q808	2SD839P
Q809	2SC1317
Q810	2SC1684
Q811	2SC1846
Q812	2SA564
Q851, 852	2SC1317
Q853, 854	2SC2021SF
Q901, 902	2SC1684
Q903, 904, 905, 906, 907, 908, 909, 910	2SD636R
Q911, 912, 913, 914	2SA564
Q915	2SC1684
Q916	2SC945
Q917	2SC1684
Q918	2SA564
Q919	2SC1684
Q1001	2SA564
Q1002	2SC1684

DIODES & RECTIFIERS

D101, 102	0A90M
D103, 104	MA1082
D105, 106, 107, 108, 109, 110	MA161
D111, 112	0A90M
D201	1S2473
D202	MA1056
D203	MA161
D301	MA1190
D302, 303, 304	MA150
D305	0A90Z
D306	MA161
D403, 404, 405, 406, 407	MA161
D409, 410	MA161
D412	MA161
D416	MA1051
D417	SM112
D418	MV121
D419, 420, 421, 422	MA161
D423	0A90Z
D424	MV121
D551, 552	MA161
D603	MV121
D604	MA161
D606	MA161
D631	MA161
D632	0A90Z
D633	SM112
D634	0A90Z
D635	SM102
D661	LN16BP
D662	LN32
D702	MA161
D703	MA1120
D704	MA1075
D801, 802, 803, 804 △	SM102
D805, 806 △	RVD10DC2
D807, 808 △	RVD10DC2R
D809, 810, 811, 812 △	SM102
D813	MA1075
D814	MA150
D815	SM112
D816	MA161
D817	MA161
D901, 902	MA161
D903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916	MA161
D1001, 1002	MA161
D1003	MA1047
D1004, 1005	1S2473

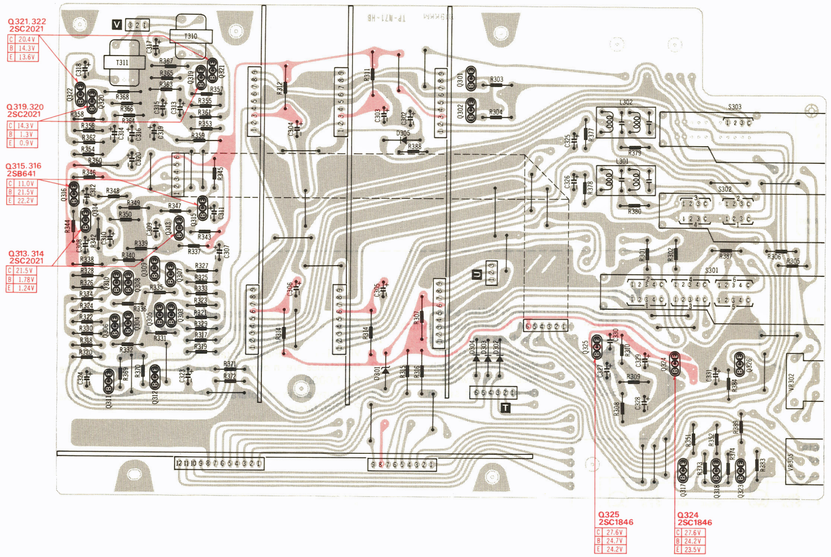
INTEGRATED CIRCUITS

IC401	AN6251
IC402, 403, 404	M53200P
IC405	M53273P
IC601	M5200P
IC701	AN640F
IC702	AN660
IC703	M58432P
IC901, 902	AN6870
IC903, 904, 905, 906	UPC4558C
IC907, 908	TA7506P
IC909, 910	UPC4558C
IC911	M53273P
IC1001	MN1430RT
IC1002, 1003	DN6838

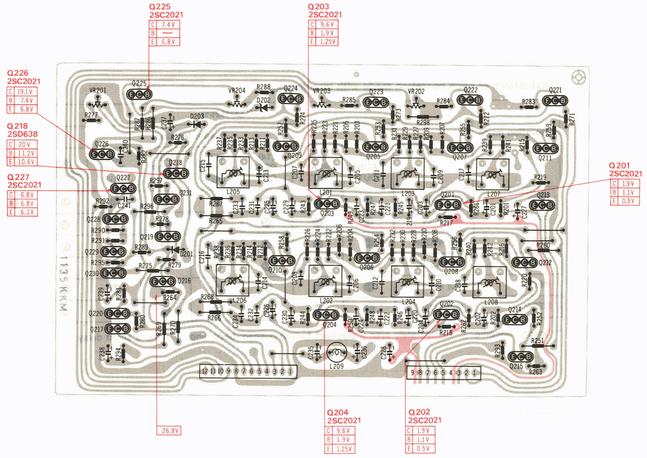
Ref. No.	Part No.	Part Name & Description
TRANSFORMERS		
T1 D △	QLPD38ENX	AC Power Transformer
※For All European areas except United Kingdom. BA △	QLPN49ENX	〃
※For United Kingdom and Australia. T310, 311	QLT2D26X	Headphones Transformer
T851	QLB0191	Oscillation Transformer
T852	QLB0190	RF Output Transformer
COILS		
L1, 2	QLQX3441K	Choke Coil
L201, 202, 203, 204, 205, 206, 207, 208	QLQX0331W	Peaking Coil
L209 A	QLQX2421Y	Choke Coil
※For Australia. L301, 302	QLM9Z3K	MPX Filter
L601, 602	QLQZ1014D	Choke Coil
L801	QLQZ1014D	〃
L851, 852	QLQX0331W	Peaking Coil
SWITCHES		
S301	QSR6401	Rotary Switch
S302, 303	QSR4304	〃
S401, 402, 403, 404, 405, 406, 407	QSW1111H	Push Switch
S551, 552, 553, 554	QSWX409A	〃
S601, 602	QSM0067	Micro Switch
S603	QSW1111H	Push Switch
S801 △	QSW2214	〃
S802 △	QSR1407	Rotary Switch
S901, 902	QSW1111H	Push Switch
S5001, 5002, 5003, 5004	QSW1111H	〃
FUSES		
F802, 803 DB △	XBAQ0013	Fuse (200mAT)
※For All European areas. F804, 805 DB △	XBAQ0004	Fuse (1AT)
※For All European areas. F806, 807, 808 DB △	XBAQ0010	Fuse (1.6AT)
※For All European areas. F809 DB △	XBAQ0006	Fuse (315mAT)
※For All European areas.		
JACKS		
J1	QEJ5003S	Jack Board Assembly
J2	QJA0249C	Headphones Jack
J3	QJA0444H	Microphone Jack
PILOT LAMPS		
PL401, 402, 403, 404	XAMQ34S50W	Pilot Lamp
PL551, 552, 553, 554	XAMQ34S200W	〃
PL801	XAMQ41S500	Pilot Lamp

CIRCUIT BOARD

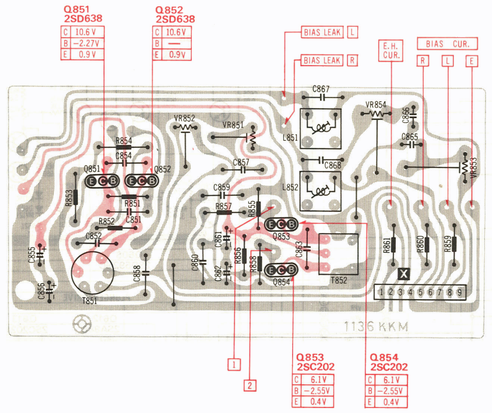
MAIN AMP CIRCUIT BOARD



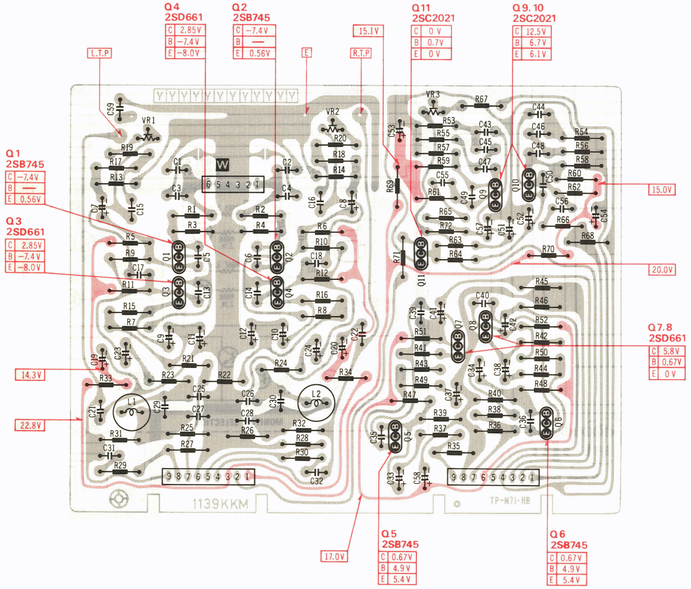
RECORD AMP CIRCUIT BOARD



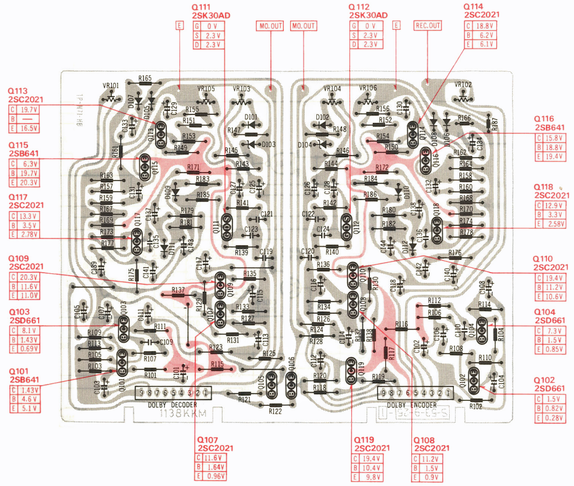
BIAS OSCILLATION CIRCUIT BOARD



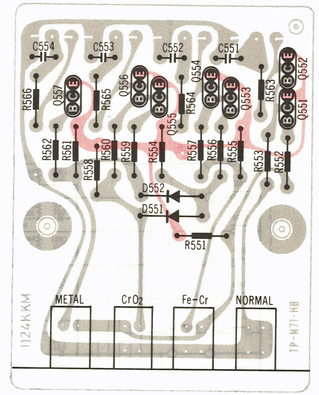
PLAYBACK EQUALIZER/TEST OSCILLATOR/ MIC AMP CIRCUIT BOARD



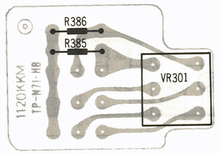
DOLBY NR CIRCUIT BOARD



TAPE SELECT CIRCUIT BOARD

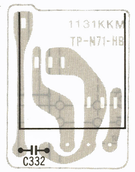


INPUT LEVEL CIRCUIT BOARD

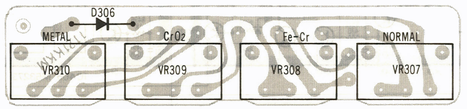


HEADPHONES JACK CIRCUIT BOARD

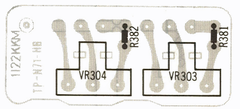
MIC JACK CIRCUIT BOARD



BIAS ADJUSTMENT CIRCUIT BOARD



RECORDING CALIBRATION CIRCUIT BOARD



MAIN JACK CIRCUIT BOARD

NOTE:

The circuit shown in red on the conductor is +B (bias) circuit. Values indicated in ▭ are DC voltage between the chassis and electrical parts.

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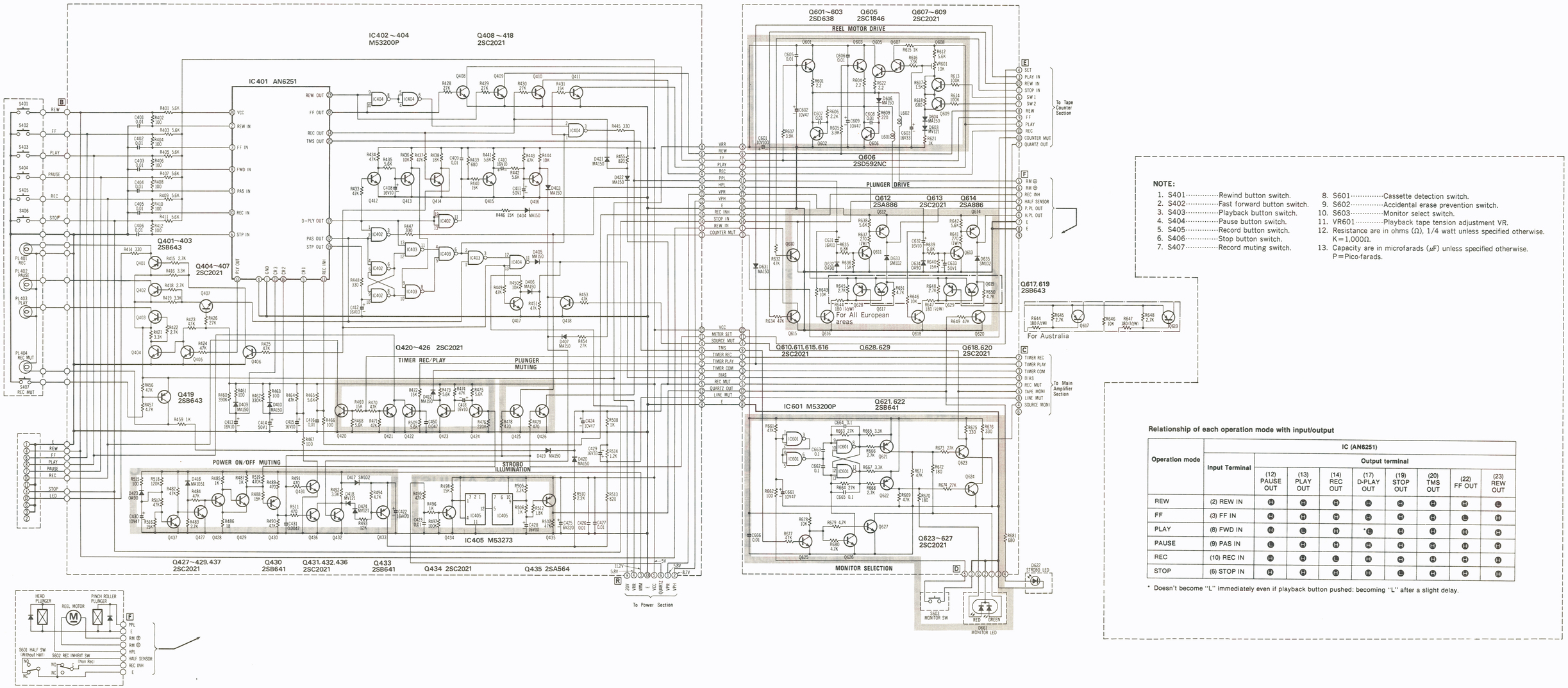
SCHEMATIC DIAGRAM

Main Control Section



NOTE:

1. S401 ..... Rewind button switch.
2. S402 ..... Fast forward button switch.
3. S403 ..... Playback button switch.
4. S404 ..... Pause button switch.
5. S405 ..... Record button switch.
6. S406 ..... Stop button switch.
7. S407 ..... Record muting switch.
8. S601 ..... Cassette detection switch.
9. S602 ..... Accidental erase prevention switch.
10. S603 ..... Monitor select switch.
11. VR601 ..... Playback tape tension adjustment VR.
12. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000Ω.
13. Capacity are in microfarads (μF) unless specified otherwise. P=Pico-farads.

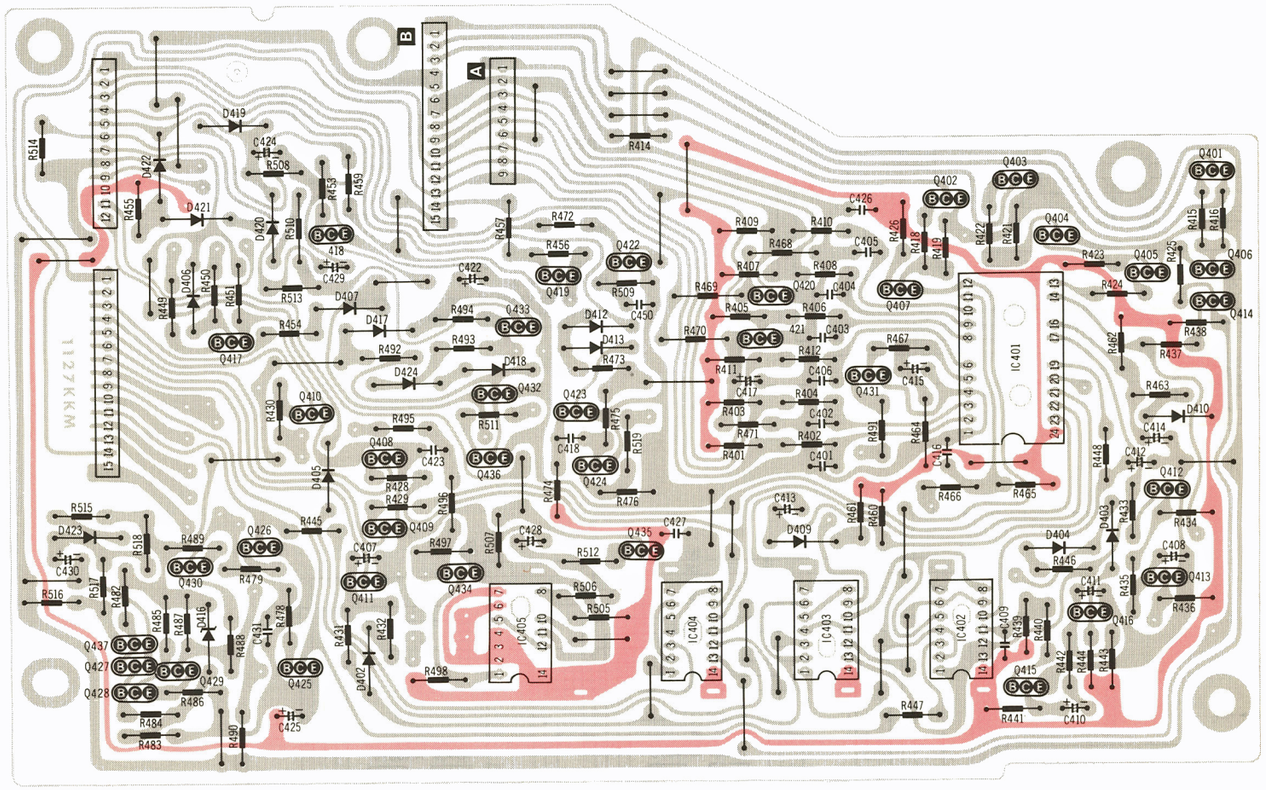
Relationship of each operation mode with input/output

Operation mode	Input Terminal	IC (AN6251) Output terminal							
		(12) PAUSE OUT	(13) PLAY OUT	(14) REC OUT	(17) D-PLAY OUT	(19) STOP OUT	(20) TMS OUT	(22) FF OUT	(23) REW OUT
REW	(2) REW IN	H	H	H	H	H	H	H	L
FF	(3) FF IN	H	H	H	H	H	L	H	H
PLAY	(8) FWD IN	H	L	H	*L	H	H	H	H
PAUSE	(9) PAS IN	L	H	H	H	H	H	H	H
REC	(10) REC IN	H	H	L	H	H	H	H	H
STOP	(6) STOP IN	H	H	H	H	L	H	H	H

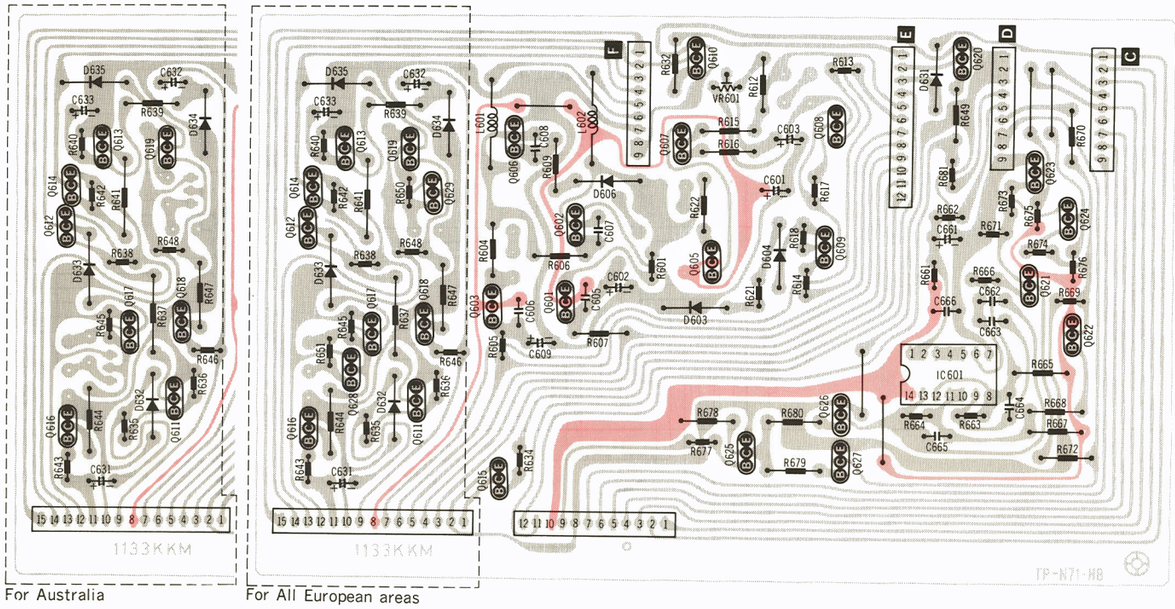
* Doesn't become "L" immediately even if playback button pushed: becoming "L" after a slight delay.

CIRCUIT BOARD

MAIN CONTROL CIRCUIT BOARD



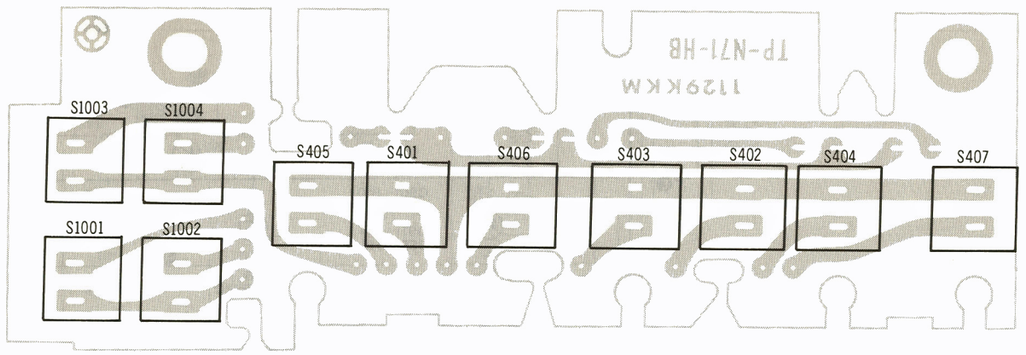
REEL MOTOR/PLUNGER/MONITOR SELECTION CIRCUIT BOARD



For Australia

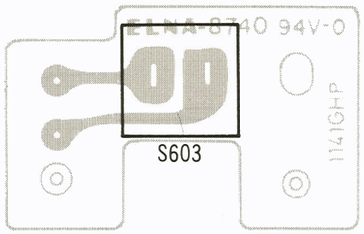
For All European areas

OPERATION SWITCH CIRCUIT BOARD

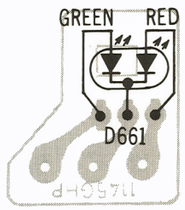


QUARTZ STROBO CIRCUIT BOARD

MONITOR SELECT CIRCUIT BOARD

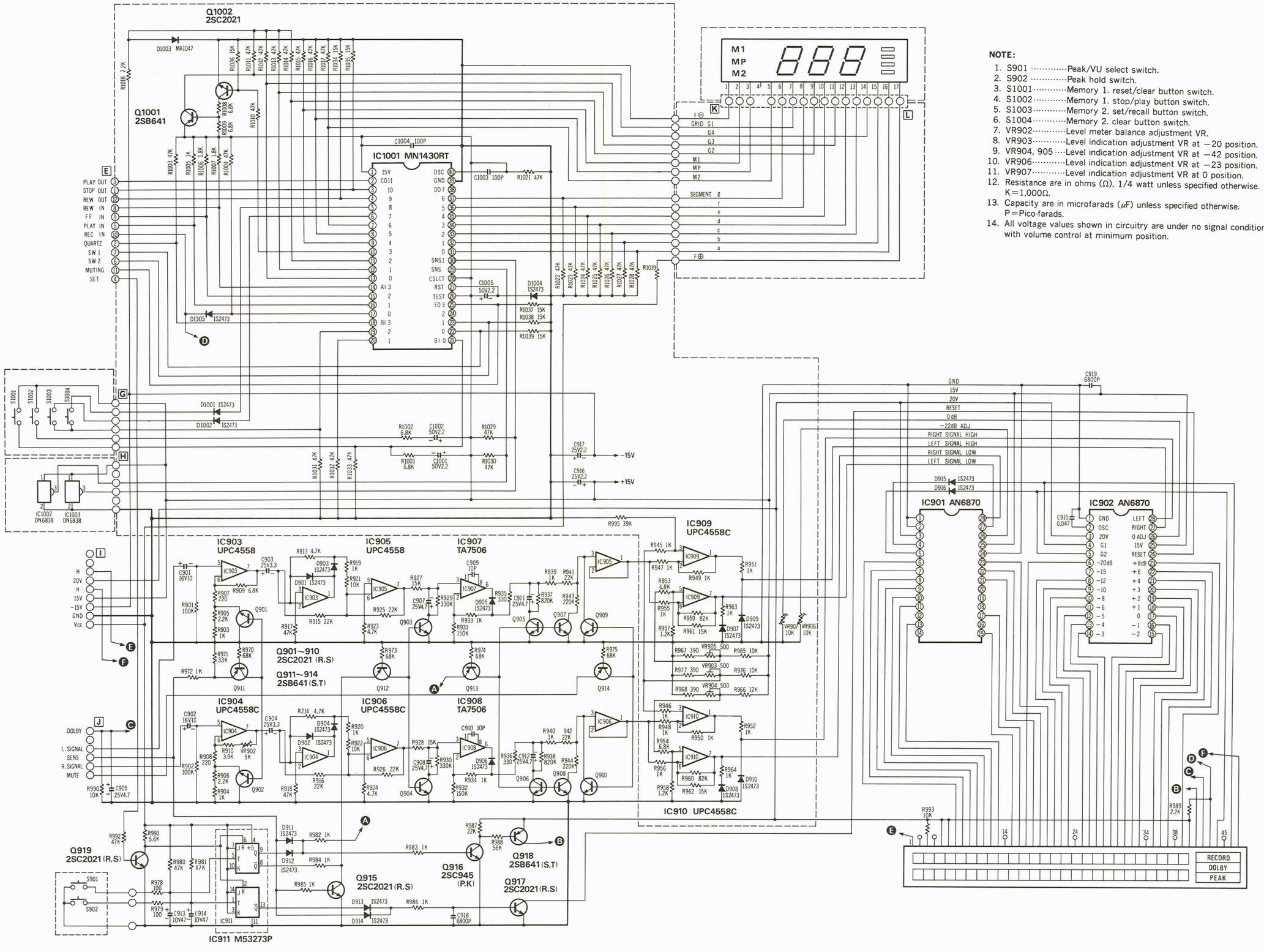


LED MONITOR INDICATOR CIRCUIT BOARD



NOTE:
The circuit shown in red on the conductor is +B (bias) circuit.

SCHEMATIC DIAGRAM
TAPE COUNTER AND LEVEL METER SECTION

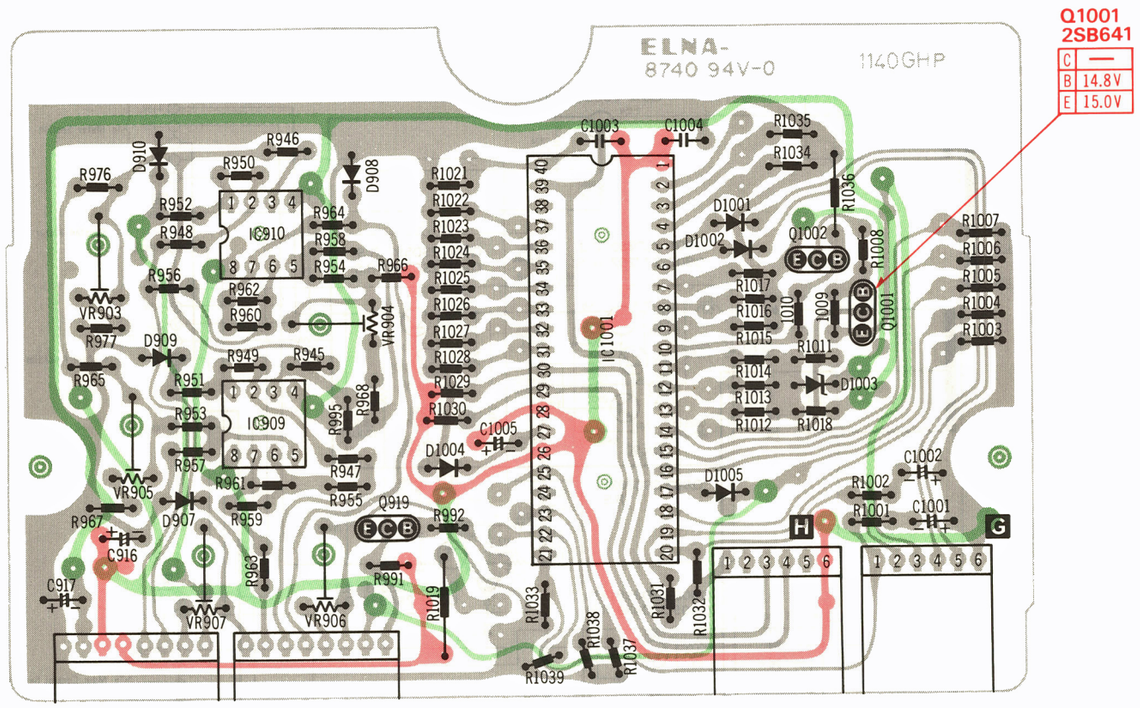


NOTE:

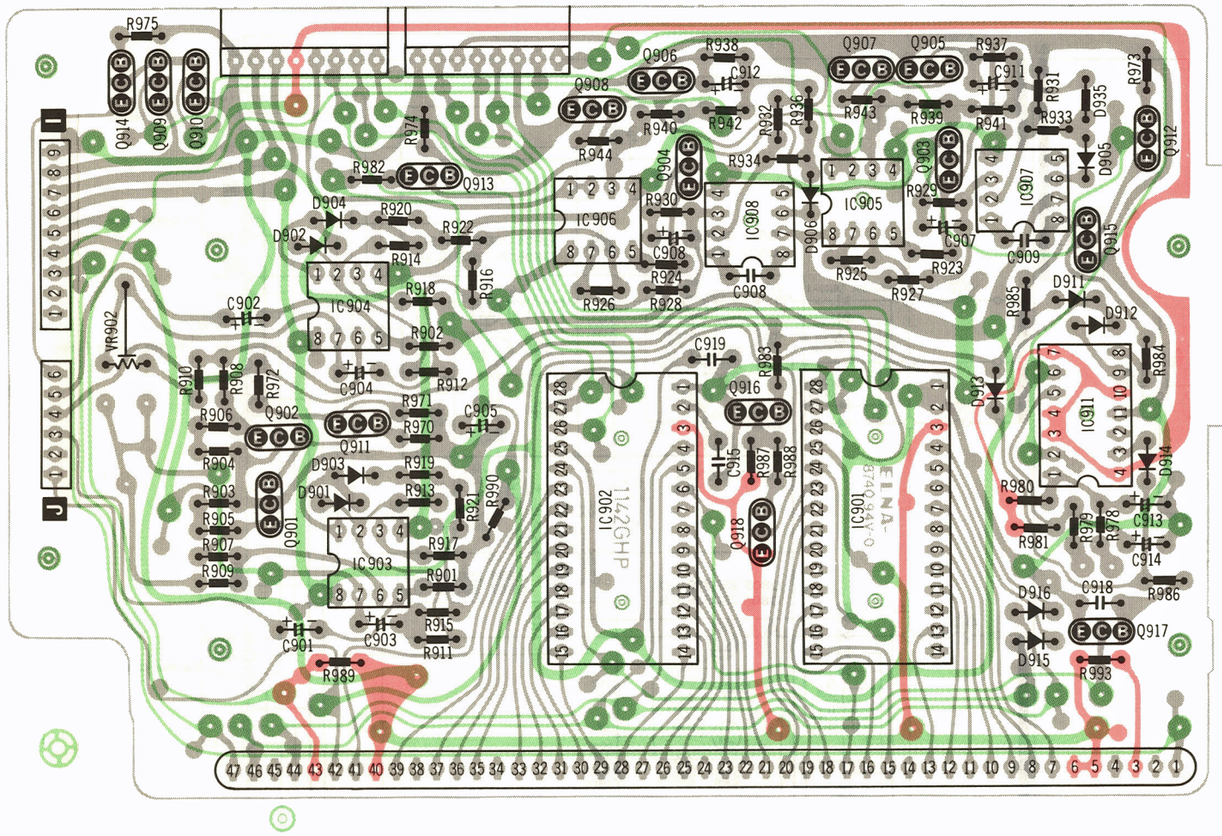
1. S901 ·····Peak/VU select switch.
2. S902 ·····Peak hold switch.
3. S1001·····Memory 1. reset/clear button switch.
4. S1002·····Memory 1. stop/play button switch.
5. S1003·····Memory 2. set/recall button switch.
6. S1004·····Memory 2. clear button switch.
7. VR902·····Level meter balance adjustment VR.
8. VR903·····Level indication adjustment VR at −20 position.
9. VR904, 905 ····Level indication adjustment VR at −42 position.
10. VR906·····Level indication adjustment VR at −23 position.
11. VR907·····Level indication adjustment VR at 0 position.
12. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000Ω.
13. Capacity are in microfarads (μF) unless specified otherwise. P=Pico-farads.
14. All voltage values shown in circuitry are under no signal condition with volume control at minimum position.

CIRCUIT BOARD

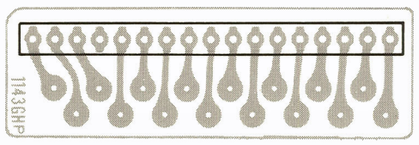
MICRO COMPUTER CIRCUIT BOARD



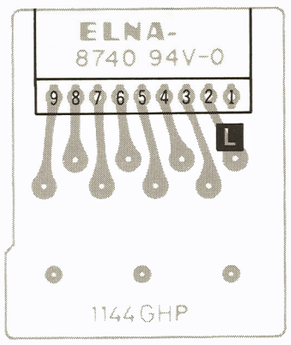
FLUORESCENT LEVEL METER CIRCUIT BOARD



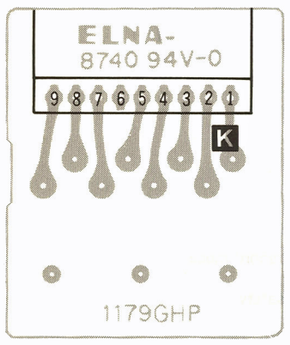
DIGITAL TAPE COUNTER CIRCUIT BOARD



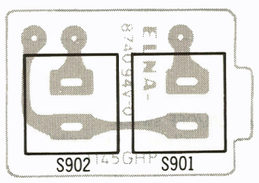
CONNECTOR CIRCUIT BOARD



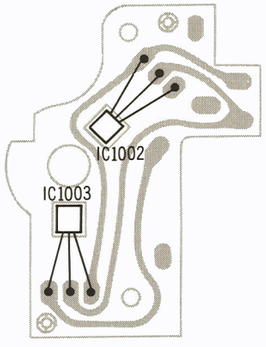
CONNECTOR CIRCUIT BOARD



METER FUNCTION CIRCUIT BOARD



HALL IC CIRCUIT BOARD

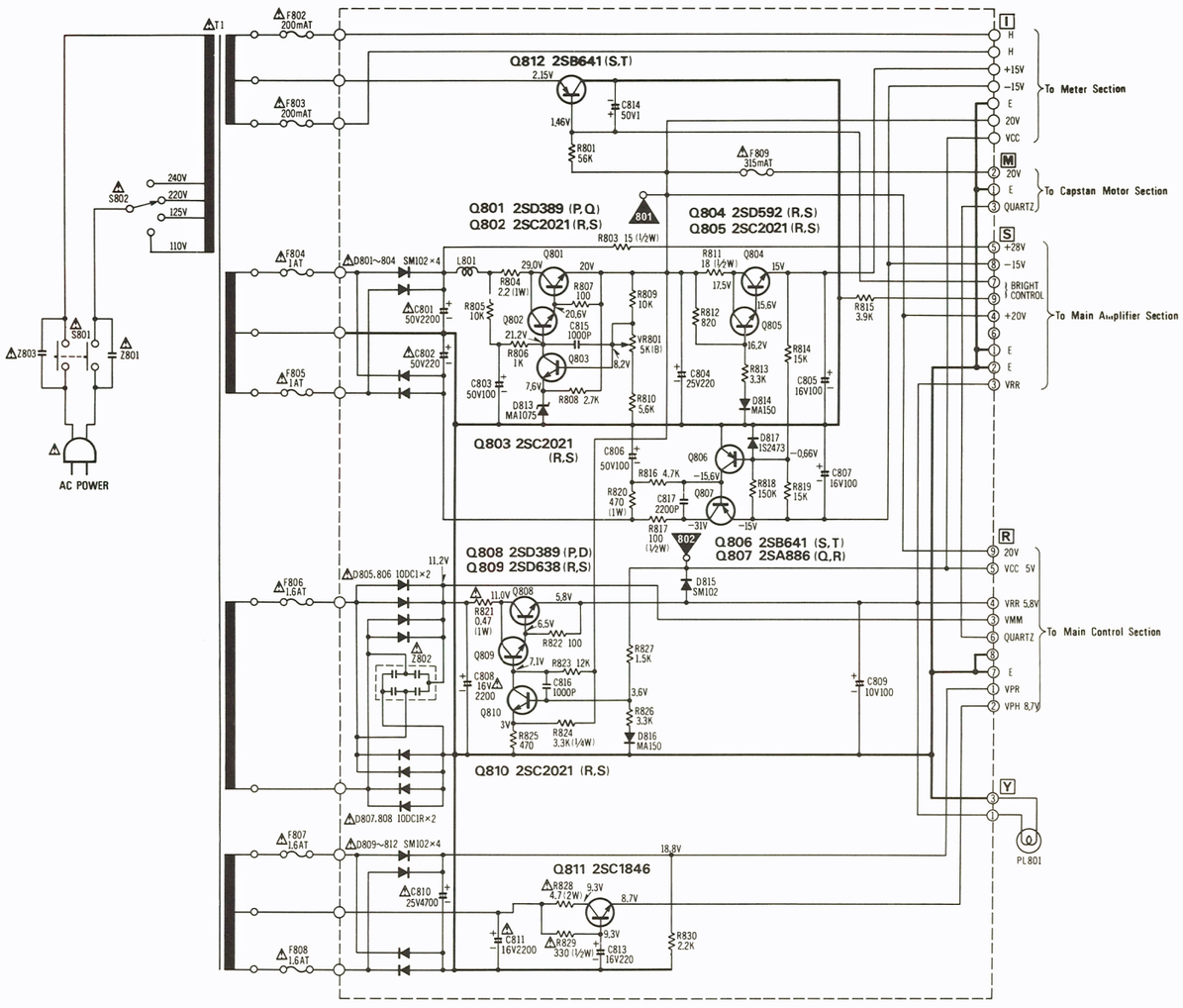


NOTE:

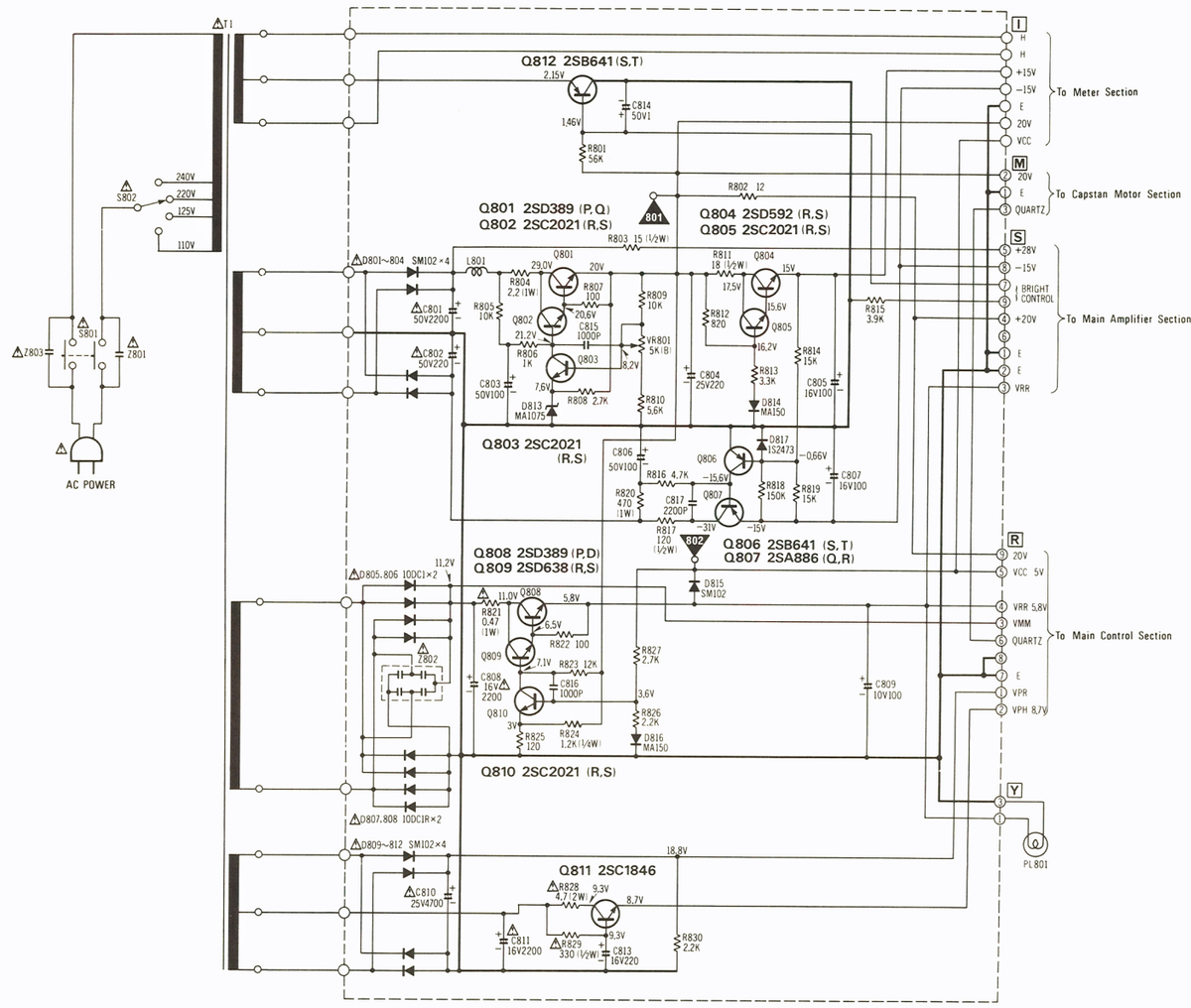
The circuit shown in red on the conductor is +B (bias) circuit. Values indicated in ▭ are DC voltage between the chassis and electrical parts.

SCHEMATIC DIAGRAM
POWER SECTION

For All European areas.



For Australia

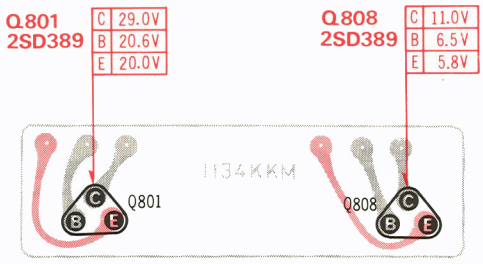


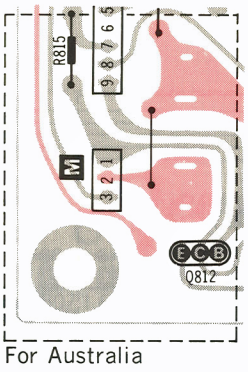
NOTE:

1. S801·····Power ON/OFF switch.
2. S802·····AC power voltage select switch.
3. VR801·····DC voltage (20V) adjustment VR.
4. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
   K=1,000Ω.
5. Capacity are in microfarads (μF) unless specified otherwise.
   P=Pico-farads.
6. All voltage values shown in circuitry are under no signal condition and record mode with volume control at minimum position.
7. ⚠ indicates that only parts specified by the manufacturer be used for safety.

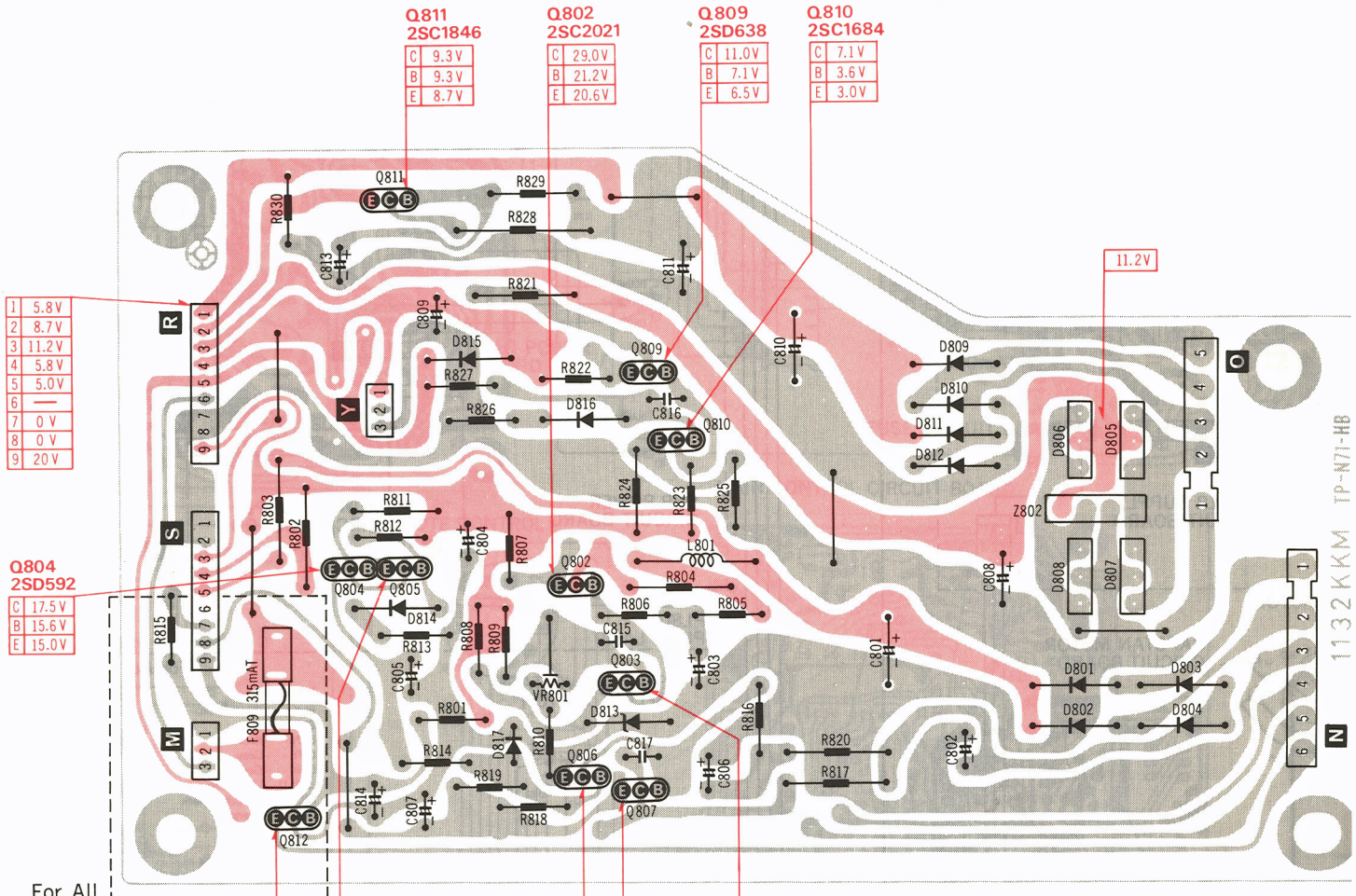
CIRCUIT BOARD POWER SECTION

SUB-POWER CIRCUIT BOARD





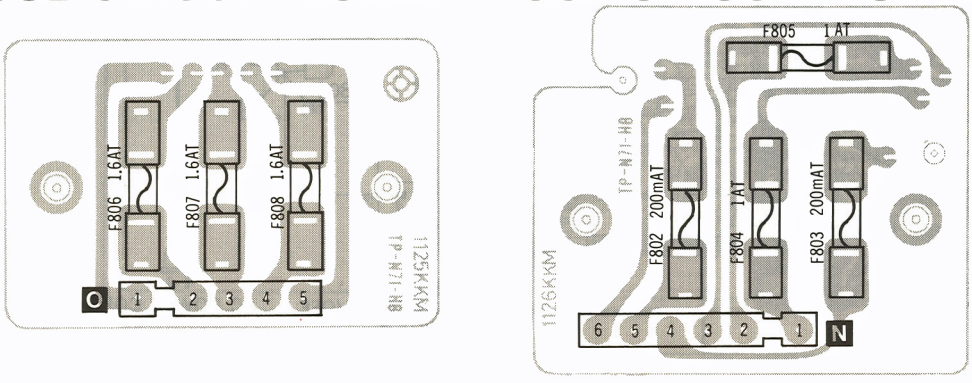
POWER SUPPLY CIRCUIT BOARD



NOTE:

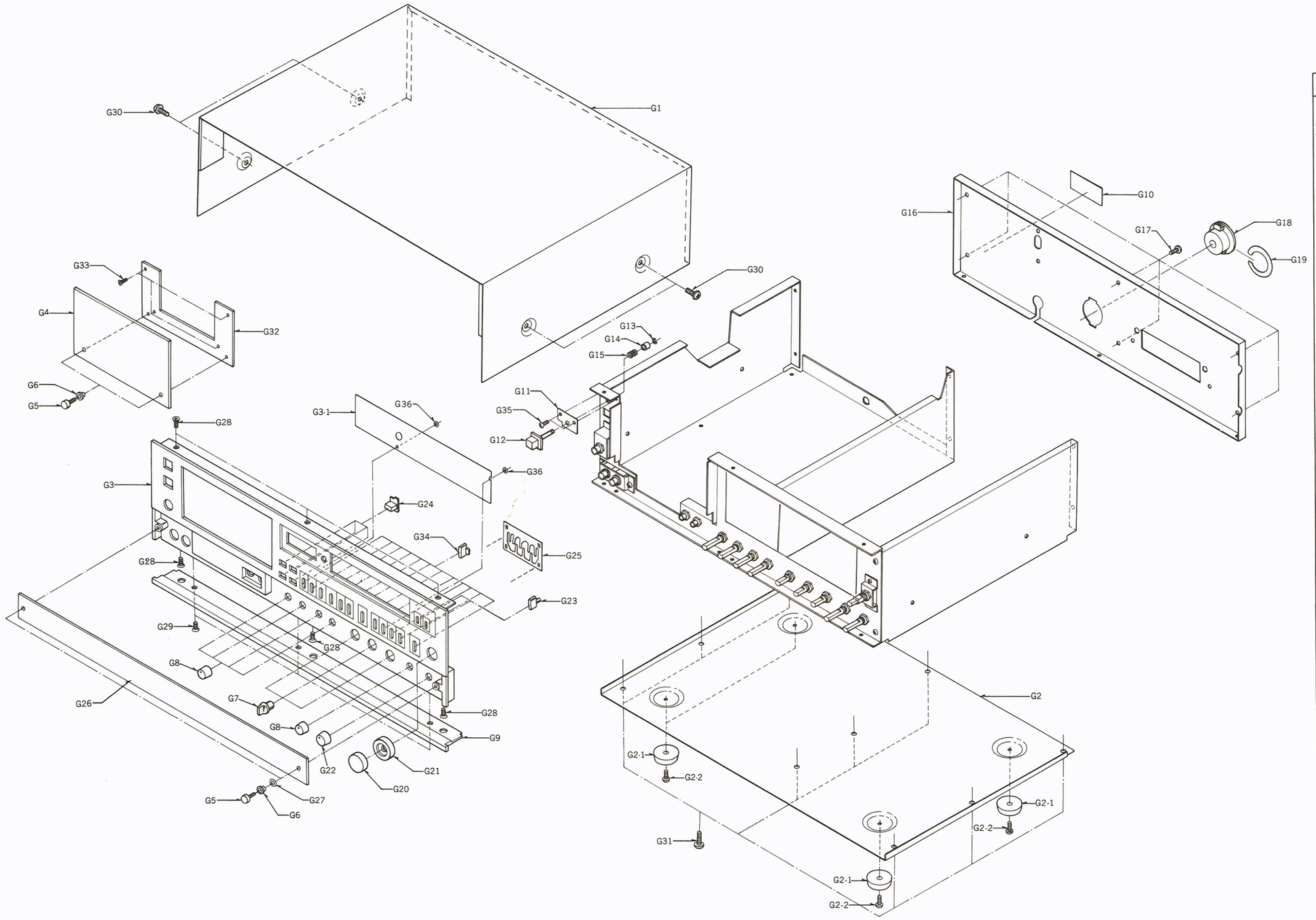
The circuit shown in red on the conductor is +B (bias) circuit.
Vaiues indicated in ▭ are DC voltage between the chassis and electrical parts.

FUSE CIRCUIT BOARD FUSE CIRCUIT BOARD



For All European areas.

CABINET PARTS



Ref. No.		Part No.	Part Name & Description
		CABINET PARTS	
G1		QGC1130	Case Cover
G2		QYB0392	Button Cover Assembly
G2-1		QKA1076	Rubber Foot
G2-2		XSN4+6S	Screw ⊕4×6
G3		QYP0839	Front Panel Assembly
G3-1		QGL1132	Meter Cover
G4		QGK2804	Cassette Lid
G5		QHQ1272	Cassette Lid Holding Screw
G6		QBG1551	Rubber Cushion
G7		QGT1438	Volume Knob-D
G8		QGT1439	Volume Knob-E
G9		QGK2934	Sub-Plate
G10	D	QGS2689	Main Name Plate
		※For All European areas except United Kingdom.	
	BA	QGS2690	〃
		※For United Kingdom and Australia.	
G11		QXH0301	Eject Plate
G12		QXS1104	Eject Button
G13		XUC25FT	Stop Ring
G14		QDP1387	Roller
G15		QBC1177	Eject Spring
G16		QMK1816	Back Cover
G17		XTN3+8B	Screw ⊕3×8
G18		QJS0803X	Remote Control Socket
G19		QMA3445	Socket Angle
G20		QYT0507	Volume Knob-A
G21		QYT0508	Volume Knob-B
G22		QYT0509	Volume Knob-C
G23		QGO1531	Push Button-A
G24		QGO1532	Push Button-B
G25		QBP1836	Plate Spring
G26		QKF6013H	Lower Controls Cover
G27		QBW2046	Snap Washer
G28		XSS3+6S	Screw ⊕3×6
G29		XSS3+8BVS	Screw ⊕3×8
G30		XSN4+8S	Screw ⊕4×8
G31		XTN4+8B	Tapping Screw ⊕4×8
G32		QGK2944	Cassette Lid Holding Plate
G33		XVE26A4FZ	Screw
G34		QGO1553	Push Button-C
G35		XTN3+6B	Tapping Screw ⊕3×6
G36		QBW2007	Snap Washer
		ACCESSORIES	
A1		RP023A	Connection Cord
A2		QFTC305011TZ	Demonstration Tape
A3	D	QQT2629	Instruction Book
		※For All European areas except United Kingdom.	
	BA	QQT2631	〃
		※For United Kingdom and Australia.	
		PACKINGS	
P1		QPN3882	Inside Carton
P2		QPA0476	Cushion-A (LEFT)
P3		QPA0477	Cushion-B (RIGHT)
P4		XZB50X65A04	Poly Bag

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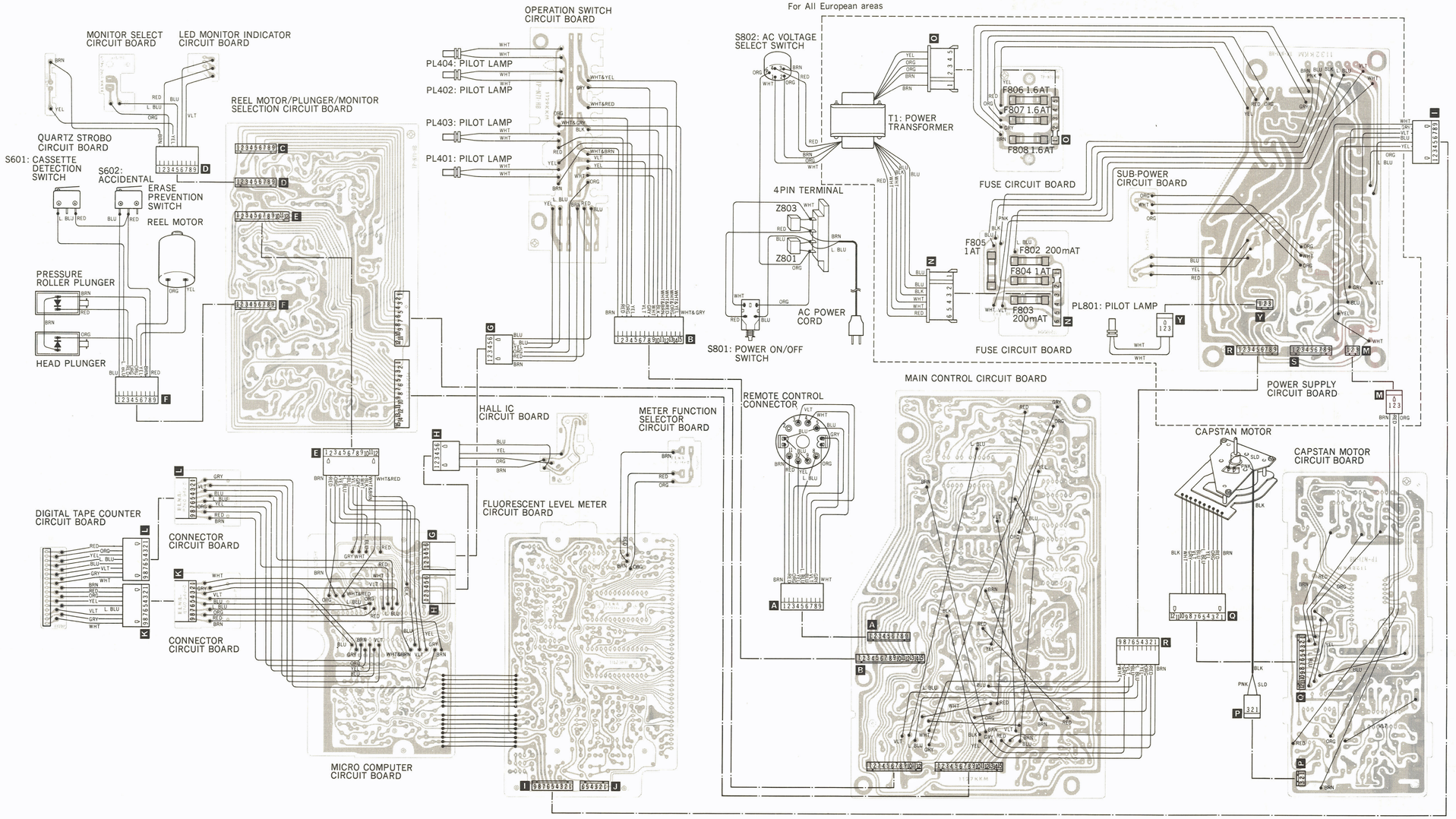
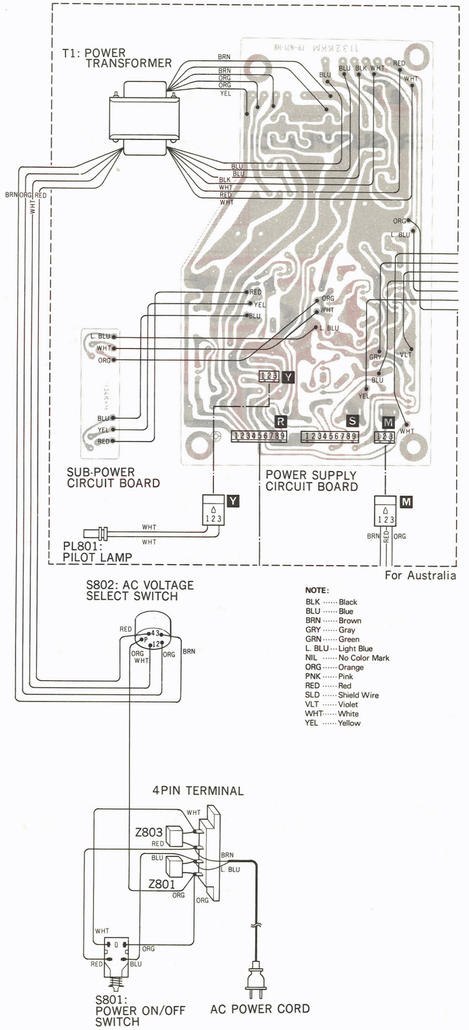
WIRING CONNECTION DIAGRAM

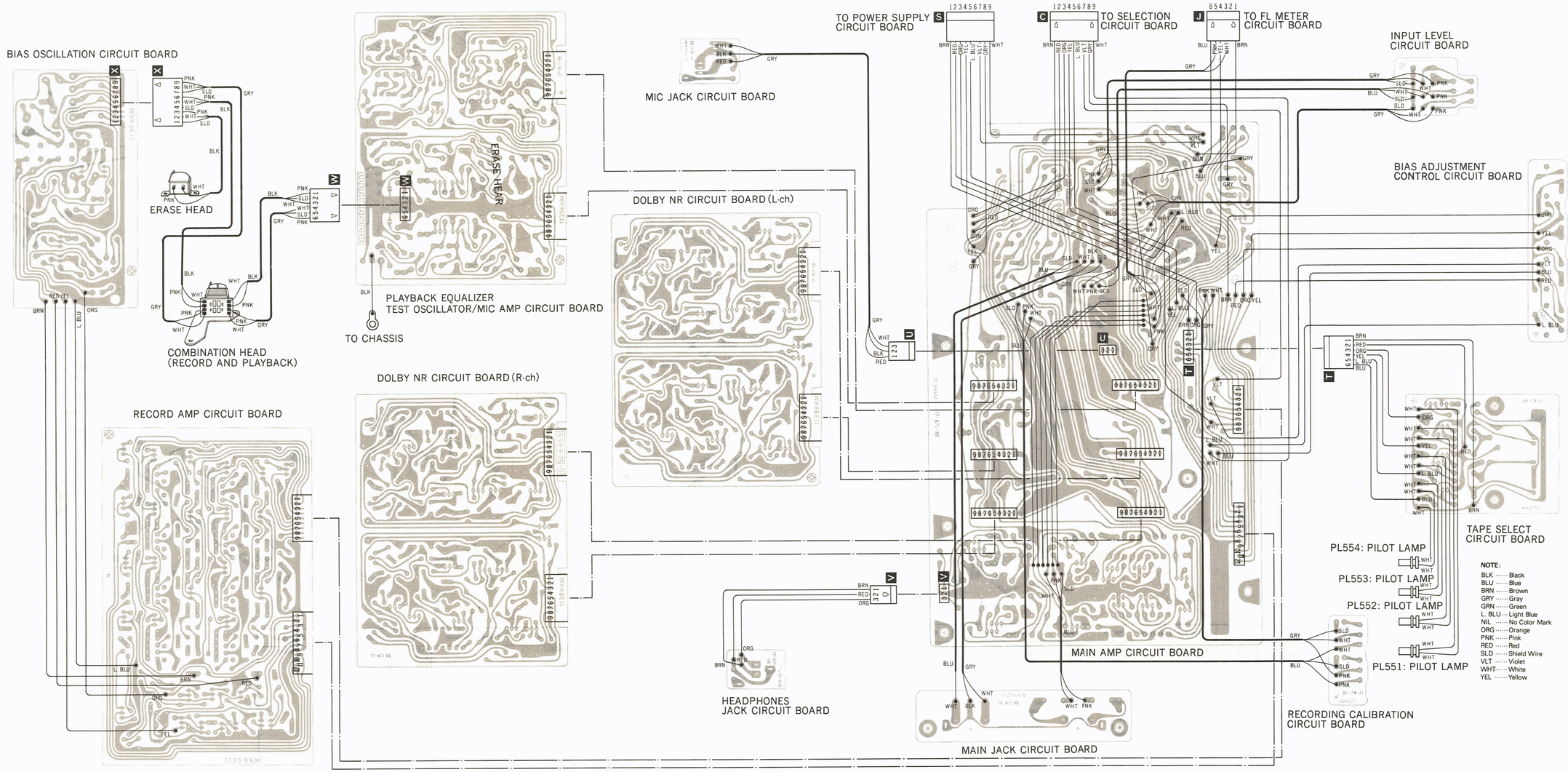
Controls Section





WIRING CONNECTION DIAGRAM

Amp Section



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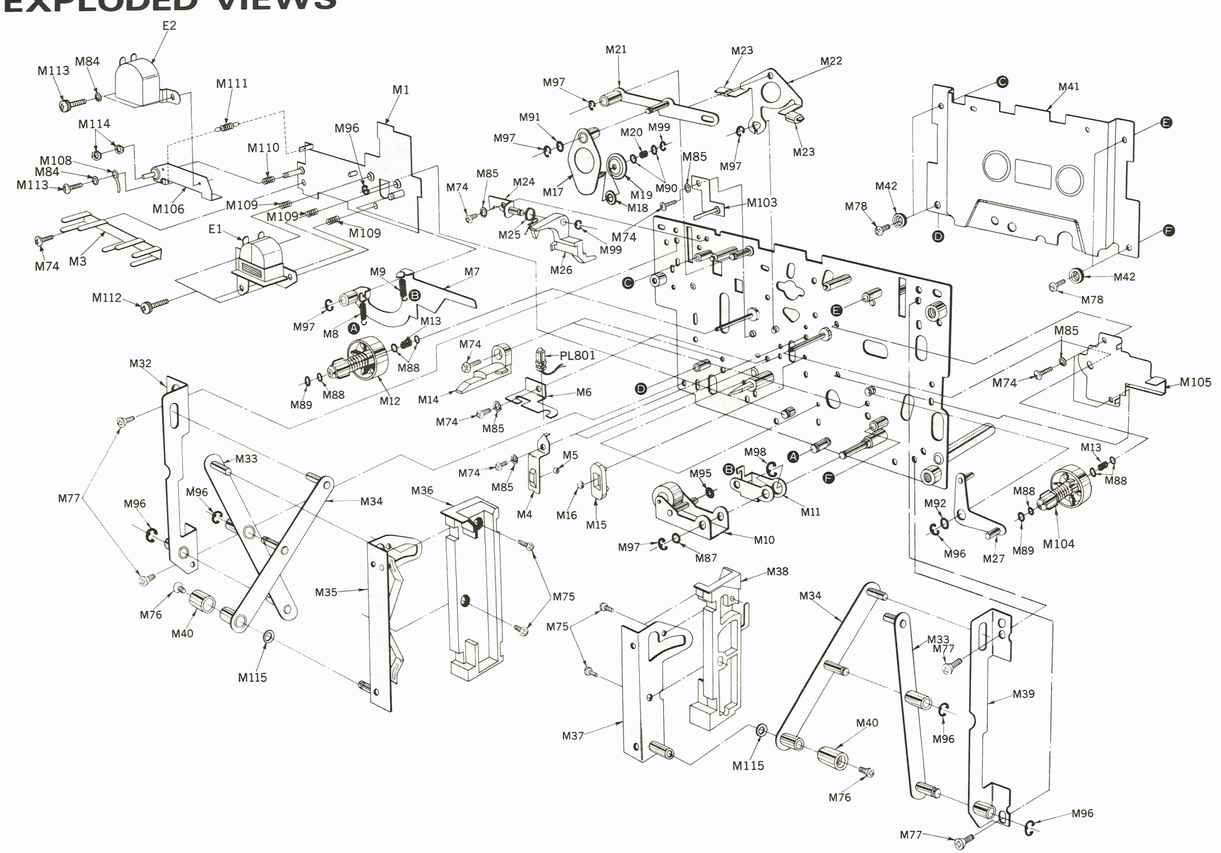
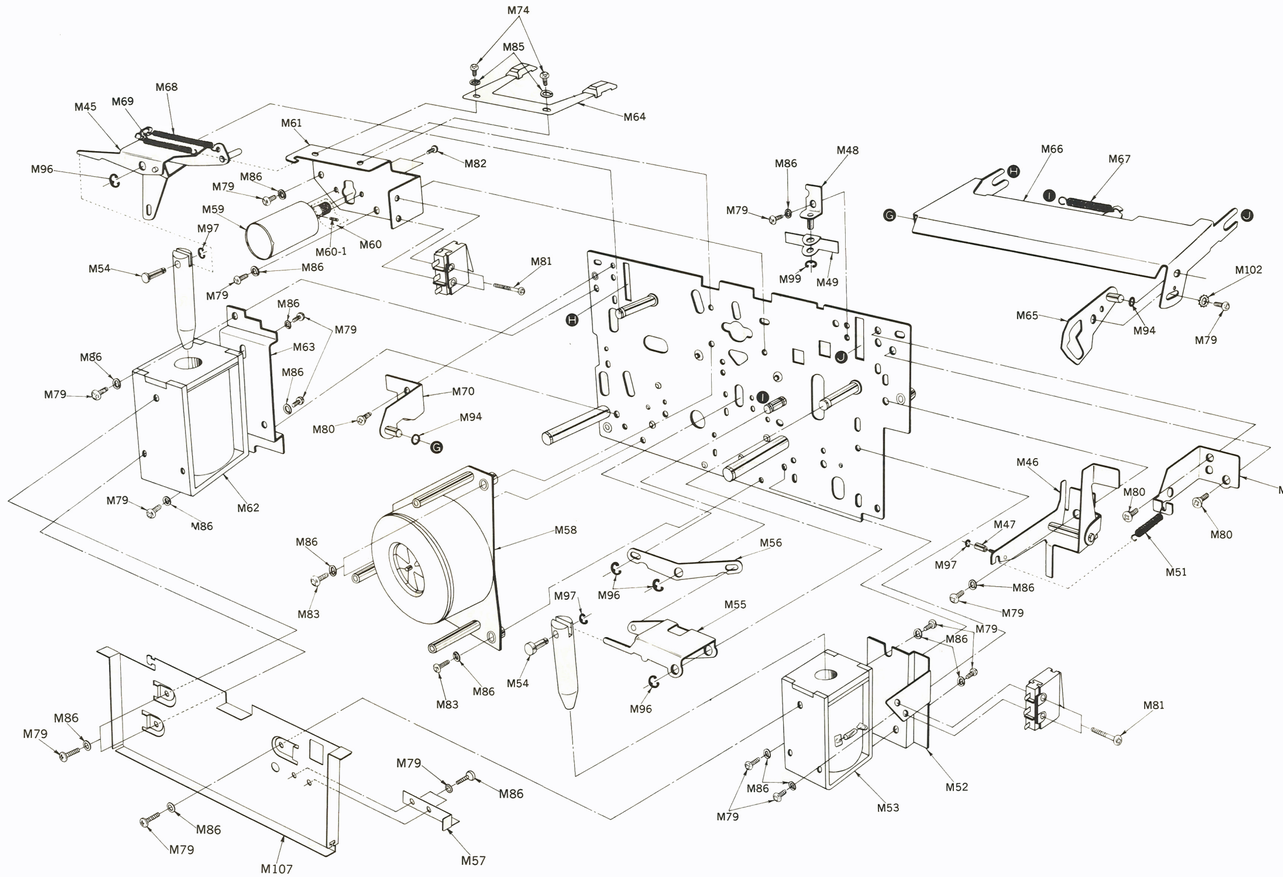
EXPLODED VIEWS





MECHANICAL PARTS

Ref. No.	Part No.	Part Name & Description
M1	QXK2152	Head Base Plate Assembly
M3	QTD1270	Head Wires Clamper
M4	QBP1733	Steel Ball Holder-A
M5	QDK1012	Steel Ball 2.5ϕ
M6	QMA3321	Lamp Angle
M7	QXL1168	Pressure Roller Lever Assembly
M8	QBT1490	Eject Lever Spring
M9	QBT1441	Pressure Roller Spring
M10	QXL1166	Pressure Roller Assembly
M11	QML3267	Pressure Roller Lever-1
M12	QXD0087	Reel Table
M13	QBC1272	Back Tension Spring
M14	QMG0054	Cassette Guide
M15	QMH2009	Steel Ball Holder-B
M16	QDK1006	Steel Ball 3ϕ
M17	QXL1189	Idler Lever Assembly
M18	QBF1260	Idler Felt
M19	QXI0101	Idler Assembly
M20	QBC1308	Idler Spring
M21	QXL1164	Brake Lever Assembly
M22	QML3273	Brake
M23	QBG1132	Stopper Rubber
M24	QXA0714	Detection Angle Assembly
M25	QBN1573	Detection Lever Spring
M26	QML3285	Detection Lever
M27	QXL1172	Lever-A Assembly
M32	QXA0703	Angle-L Assembly
M33	QXL1191	Link Lever-A Assembly
M34	QXL1190	Link Lever-B Assembly
M35	QXA0706	Holder Angle-L Assembly
M36	QMH2027	Cassette Holder-L
M37	QXA0705	Holder Angle-R Assembly
M38	QMH2028	Cassette Holder-R
M39	QXA0704	Angle-R Assembly
M40	QKJ0245	Spacer-A
M41 ⚿	QXH0286	Mechanism Cover
※For All European areas except United Kingdom.		
⚿	QXH0277B	〃
※For United Kingdom and Australia.		
M42	QMZ1213	Spacer-B
M43	QBP1135	Spring Washer
M45	QXL1165	Lever-B Assembly
M46	QXL1188	Eject Lever Assembly
M47	QDP1758	Roller
M48	QXA0713	Angle Assembly
M49	QML3284	Release Lever
M50	QMA3314	Connector Angle
M51	QBT1753	Playback Lever Spring
M52	QMA3311	Plunger Angle-L
M53	QME0141	Plunger
M54	QMN2095	Plunger Pin
M55	QXL1171	Plunger Lever-L Assembly
M56	QML3276	Plunger Lever
M57	QMA3681	Reinforcement Angle
M58	QXK2010	Capstan Motor Assembly
M59	MKCN22AE5	Reel Motor
M60	QXP0574	Motor Pulley Assembly
M60-1	XXE26D3FZ	Set Screw
M61	QMA3313	Motor Angle
M62	QXE0243	Plunger
M63	QMA3312	Plunger Angle-R
M64	QXH0276	Cassette Holding Cushion
M65	QXL1173	Lock Lever Assembly
M66	QML3282	Connector Lever
M67	QBT1553	Holder Spring-R
M68	QBT1405	Lever Spring
M69	QBT1713	Record Spring
M70	QXA0702	Connector Angle-R Assembly
M74	XSN26+4	Screw ⊕2.6×4
M75	XSN26+4BVS	〃
M76	XSS2+4	Screw ⊕2×4
M77	XSS3+4S	Screw ⊕3×4
M78	QHQ1185	Step Screw
M79	XSN3+5S	Screw ⊕3×5
M80	XSS3+6S	Screw ⊕3×6
M81	QHQ1182	Step Screw
M82	XSN2+3	Screw ⊕2×3
M83	XSN3+8S	Screw ⊕3×8
M84	XWA2	Spring Washer 2ϕ
M85	XWA26	Spring Washer 2.6ϕ
M86	XWA3	Spring Washer 3ϕ
M87	QBW2016	Poly Washer
M88	QBW2012	〃
M89	QBW2008	〃
M90	QBW2015	〃
M91	QBW2017	〃
M92	QBW2018	〃
M94	QBW2019	Poly Washer
M95	QBK7123	Fiber Washer
M96	XUC3FT	Stop Ring 3ϕ
M97	XUC25FT	Stop Ring 2.5ϕ
M98	XUC5FT	Stop Ring 5ϕ
M99	XUC2FT	Stop Ring 2ϕ
M100	XSN26+6	Screw ⊕2.6×6
M101	XWG26	Flat Washer
M102	XWC3	Lock Washer
M103	QXH0308	Back Tension Plate
M104	QXD0101	Takeup Reel Table Assembly
M105	QTD1271	Hall IC Holding Plate
M106	QML1276	Erase Head Lever
M107	QMA3642	Circuit Board Angle
M108	QTD1163	Rug Plate
M109	QBC1235	Head Spring
M110	QBC1221	〃
M111	QBT1619	Idler Spring
M112	XSS2+10	Screw ⊕2×10
M113	XSN2+4	Screw ⊕2×4
M114	XNF26AF	Nut
M115	QBK7005	Washer

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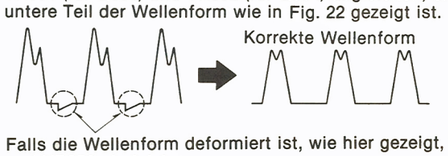
Messungen und Einstellung

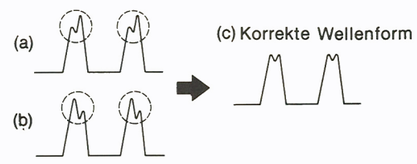
Anm.:

1. Für saubere Köpfe sorgen.
2. Für saubere Tonwelle und Andruckrolle sorgen.
3. Auf normale Raumtemperatur achten: 20±5°C.
4. Band Schalter: Normal.
5. Monitorschalter: Band-Position.
6. Vormagnetisierungsregler: Zentrum.
7. Eingangsregler: MAX
8. Ausgangsregler: MAX
9. Dolby-Schalter: Aus
10. Spitzenwertschalter: LINE
11. Meterhelligkeits-Regler: bright
12. Spitzen/VU-Wahlschalter: Peak
13. Spitzenhalte-Wahlschalter: OFF
14. Timer-Wahlschalter: OFF

Gegenstand	Messung und Einstellung
Ⓐ Netzteil-Abstimmung	**+20V Abstimmung** 1. Voltmeter an Meßpunkt 20V TP auf der Netzschaltungsplatte anschließen und Spannung ablesen. **NORMALWERT: +20±0.5V** 2. Abweichungen können durch Abgleich von VR801 korrigiert werden.
Ⓑ Druck der Andruckrolle Bedingung: * Wiedergabe Meßgerät: * Bandzugmesser (max. 500gr)	1. Gerät auf "Wiedergabe" schalten. 2. Bandzugmesser über die Spitze der Andruckwollenwelle (A) haken und entgegen der Andruckrichtung Andruckrolle-Tonwelle ziehen (S. Fig. 8). 3. Bandzugmesser in dem Augenblick ablesen, in dem die Andruckrolle von der Tonwelle abhebt und sich zu drehen aufhört. **NORMALWERT: 400±30gr**
Ⓒ Bandzug der Aufwickelrolle Bedingung: * Wiedergabe Meßgerät: * Cassetten-Drehmomentmesser (QZZSRKCT)	1. Cassetten-Drehmomentmesser in das Gerät montieren. 2. Gerät auf "Wiedergabe" schalten. 3. Aufwickel-Drehmoment 15 Sekunden nach Einschalten der Wiedergabefunktion ablesen. **NORMALWERT: 40±2gr-cm** 4. Weicht der Meßwert vom Standardwert ab, VR601 abgleichen.
Ⓓ Senkrechtstellen des Kopfes Bedingung: * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband (azimuth) ...QZZCFM * Testband (Bandlaufweg-Betrachtungsvorrichtung mit Spiegel)...QZZCRD	1. Den Meßaufbau zeigt Fig. 9. 2. Testband (QZZCRD) wiedergeben. 3. In diesem Zustand die Schrauben (A) und (B) in Fig. 10 und 12 so einstellen, daß das Band nicht gekräuselt oder durch die Bandführungen des Löschkopfes und des Kombinationskopfes verformt werden kann. (Fig. 11 zeigt den korrekten Zustand.) **Anm.:** Die Höhe des Löschkopfes sorgfältig abgleichen, daß die Kopfoberfläche das Band parallel berührt, wie in Fig. 12 gezeigt. 4. Testband (QZZCFM, 8kHz) wiedergeben. 5. Einstellschraube (C) (Fig. 10) auf maximale Ausgangsspannung einstellen. 6. Beide Kanäle überprüfen und auf gleiche Ausgangsspannung einstellen. 7. Nach dem Abgleich Einstellschraube mit Lack sichern.

Gegenstand	Messung und Einstellung
Ⓔ Bandgeschwindigkeit Bedingung: * Wiedergabe Meßgerät: * Elektronischer Digitalzähler * Testband...QZZCWAT	**Genauigkeit der Bandgeschwindigkeit** 1. Den Meßaufbau zeigt Fig. 13. 2. Testband (QZZCWAT 3000Hz) wiedergeben und Ausgangssignal dem Zähler zuführen. 3. Frequenz messen. 4. Beträgt die auf dem Testband aufgezeichnete Frequenz 3000Hz, so ergibt sich die Genauigkeit nach folgender formel: Genauigkeit der Bandeschwindigkeit = $= \frac{f-3000}{3000} \times 100(\%)$ worin f die gemessene Frequenz ist. 5. Die Messung soll im mittleren Teil des Bandes erfolgen. **NORMALWERT: ±0,4%** **Schwankung der Bandgeschwindigkeit:** Messung, wie oben beschrieben, für Anfang, mittleren Teil und Ende des Testbandes wiederholen und Schwankung wie folgt bestimmen: Schwankung $= \frac{f_1-f_2}{3000} \times 100(\%)$ f_1 = Maximalwert f_2 = Minimalwert **NORMALWERT: 0,3%**
Ⓕ "Wow" und "Flutter" Bedingung: * Wiedergabe Meßgerät: * Wow-Meter * Testband...QZZCWAT	1. Den Meßaufbau zeigt Fig. 14. 2. Testband wiedergeben und dabei Wow-Meter ablesen. 3. "Wow" und "Flutter" wird als Prozentwert angezeigt und kann nach JIS-Norm ausgewertet werden. 4. Die Messung ist im mittleren Teil des Bandes dureh zuführen. **NORMALWERT: 0,04% (Weff)**
Ⓖ Abstimmung der Tonwellen-Motorschaltung Bedingung: * Wiedergabe Meßgerät: * Gleichstrom-Voltmeter * Oszillograf	**A. Spannungsabgleich der Standard-Gleichstrom-Stromversorgung** 1. Gleichstromspannung zwischen VR703 und Anschluß (6) von IC702 messen, wie nachstehend gezeigt. **NORMALWERT: 0±0,05V** 2. Abweichungen können durch Abgleich von VR703 korrigiert werden. **B. Abgleich der Phasenverriegelungsstelle** 1. Gleichstromspannung zwischen Anschluß (4) von IC702 und Erdung messen, wie nachstehend gezeigt. **NORMALWERT: 5,2±0,1V** 2. Abweichungen können durch Abgleich von VR702 korrigiert werden. **C. Ausgangspegelabgleich des Positionsbestimmungs-Signals** 1. Den Oszillografen an Meßpunkt (T.P P-V) anschließen. 2. Mit dem Oszillographen die Spitze-zu-Spitze-Spannung des Positionsbestimmungs-Signals am Meßpunkt messen. 3. Falls die gemessene Spannung von der nachstehend gezeigten Spannung beträchtlich abweicht, mit VR701 die nötige Abstimmung durchführen.

Gegenstand	Messung und Einstellung
Ⓗ Frequenzgang bei Wiedergabe Bedingung: * Wiedergabe * Ausgangspegeleinsteller: Max Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM	1. Den Meßaufbau zeigt Fig. 9, jedoch ist jetzt das Testband QZZCFM zu verwenden. 2. Gerät auf "Wiedergabe" schalten. 3. Frequenzgang-Testband QZZCFM wiedergeben. 4. Ausgangsspannungen bei 12,5kHz, 8kHz, 4kHz, 1kHz, 315Hz, 250Hz, 125Hz und 63Hz mit Ausgangsspannung der Standard Frequenz 315Hz vergleichen. 5. Messungen an beiden Kanälen durchführen. 6. Prüfen, ob die Werte innerhalb der in Fig. 19 dargestellten Kurven liegen. 7. Liegen Werte außerhalb dieser Kurven, so ist dies durch Justieren von VR1 (linker Kanal) und VR2 (rechter Kanal) zu korrigieren. (S. Fig. 35).
Ⓘ Wiedergabe-Verstärkung Bedingung: * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM	1. Den Meßaufbau zeigt Fig. 9. 2. Standard-Frequenz (315Hz) vom Testband wiedergeben und Ausgangsspannung messen. 3. Messung an beiden Kanälen durchführen. **NORMALWERT: 0,65±0,05V** **Einstellung:** 1. Abweichungen können durch Abgleich von VR101 (linker Kanal) und VR101 (rechter Kanal) korrigiert werden. (S. Fig. 11). 2. Nach effolgtem Abgleich ist der Frequenzgang bei Wiedergabe erneut zu kontrollieren.
Ⓙ Signal/Rauschverhältnis bei "Wiedergabe" Bedingung: * Wiedergabe * Ausgangspegeleinsteller: Max Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM * Leerkassette	1. Den Meßaufbau zeigt Fig. 9. 2. Standardpegel-Testband (QZZCFM 315Hz) wiedergeben und Ausgangsspannung vom Röhrenvoltmeter ablesen (Vgl. "Wiedergabe-Verstärkung"). 3. Leerkassette einsetzen und auf Wiedergabe schalten. 4. Geräuschpegel vom Röhrenvoltmeter ablesen und Verhältnis zum Ausgangspegel des Testbandes bestimmen. **NORMALWERT: Größer als 47dB**
Ⓚ Störstrahlung der Vormagnetisierung Bedingung: * Aufnahme Meßgerät: * Elekeronisches Voltmeter * Oszillograf	1. Die Verbindnngen des Prüfaufbaus sind nachstehend Wiedergegeben. 2. Gerät auf Aufnahme schalten. 3. Sperrkreisspulen L851 (L-CH, Linker Kanal) und L852 (R-CH, rechter Kanal) so abgleichen, daß der Meßwert minimal wird. 4. Beide kanäle abgleichen.
Ⓛ Aufnahme-Vormagnetisierungs-Verstärkungsschaltung	**Abgleich der Transistor-Basisstrom-Wellenform** **A. Unterer Teil der Wellenform** 1. Den Bandwahlschalter in die "Metal"-Position stellen. 2. Die Aufnahme- und Pausentaste drücken. 3. Den Oszillografen an 1 (für Q853) und 2 (für Q854) anschließen. 4. Unter Beobachtung der Wellenform auf dem Oszillografen VR851 (für Q853) und VR852 (für Q854) abgleichen, bis der untere Teil der Wellenform wie in Fig. 22 gezeigt ist.  Falls die Wellenform deformiert ist, wie hier gezeigt, VR851 und VR852 abgleichen. Fig. 22

Gegenstand	Messung und Einstellung
	Anm.: Die Wellenform kann verbessert werden, indem VR851 und VR852 entgegen dem Uhrzeigersinn gedreht werden. Sobald die deformierte Wellenform korrigiert ist, VR851 und VR852 nicht mehr weiterdrehen. **B. Oberer Teil der Wellenform** 5. Nach dem Abgleichen des unteren Teils der Wellenform, den oberen Teil der Wellenform kontrollieren. 6. Falls die Wellenform assymetrisch verzerrt ist, wie in Fig. 23 gezeigt, T852 abgleichen.  Fig. 23 **Anm.:** Falls die angezeigte Wellenform wie in (a) ist, T852 im Uhrzeigersinn drehen. Falls die angezeigte Wellenform wie in (b) ist, T852 entgegen dem Uhrzeigersinn drehen. In beiden Fällen muß eine symmetrische Form erreicht werden, wie in (c) gezeigt.
Ⓜ Vormagnetisierung Bedingung: * Aufnahme * Vormagnetisierungsregler: Zentrum Meßgerät: * Röhrenvoltmeter * Oszillograf	1. Den Meßaufbau zeigt Fig. 24. 2. Gerät auf "Aufnahme" und Bandwahlschalter auf "normal" schalten. 3. Spannung vom Röhrenvoltmeter ablesen und Vormagnetisierungsstrom nach folgender Formel berechnen: $\text{Vormagnetisierungsstrom (A)} = \frac{\text{Spannung am Röhrenvoltmeter (V)}}{\text{10 (Ohm)}}$ **NORMALWERT: 1±0,3mA** 4. VR853 (linker Kanal) und VR854 (rechter Kanal) abgleichen. 5. Den Bandwahlschalter in die Fe-Cr-Position stellen und die Vormagnetisierungsspannung messen. **NORMALWERT: 1,1±0,3mA** 6. Abweichungen können durch Abgleich von VR202 korrigiert werden. 7. Den Bandwahlschalter in die CrO_2-Position stellen und die Vormagnetisierungsspannung messen. **NORMALWERT: 1,5±0,4mA** 8. Abweichungen können durch Abgleich von VR203 korrigiert werden. 9. Den Bandwahlschalter in die "Metal"-Position stellen und die Vormagnetisierungsspannung messen. **NORMALWERT: 2,2±0,6mA** 10. Abweichung können durch Abgleich von VR204 korrigiert werde.
Ⓝ Löschstrom Bedingung: * Aufnahme * Vormagnetisierungsregler: Zentrum	1. Den Meßaufbau zeigt Fig. 25. 2. Den Bandwahlschalter in die "Metal"-Position stellen. 3. Gerät auf Aufnahme schalten.

Gegenstand	Messung und Einstellung
Meßgerät: * Röhrenvoltmeter * Oszillograf	4. Spannung am Röhrenvoltmeter ablesen. 5. Löschstrom gemäß folgender Formel berechnen. $\text{Löschstrom (A)} = \frac{\text{Spannung über dem Widerstand R861 (V)}}{\text{1 (Ohm)}}$ **NORMALWERT: 95^{+5}_{-0} (Metal)** 6. Abweichungen können durch Abgleich von VR201 korrigiert werden.
Ⓞ Gesamt-Verstärkung Bedingung: * Standard-Eingangspergel Mikrofon −72±3dB NF-Eingang −24±3dB Meßgerät: * NF-Generator * Röhrenvoltmeter * Abschwächer * Oszillograf * Testband (Leerband) QZZCRA für Normal	1. Den Meßaufbau zeight Fig. 26. 2. Den Bandwahlschalter in die "normal"-Position stellen. 3. Über den Abschwächer 1kHz-Signal (−24dB) vom NF-Generator dem LINE IN-Eingang zuführen. 4. Den Abschwächer so einstellen, daß der Quellen-Monitorpegel an LINE OUT 0,65V wird. 5. Dieses Signal auf Testband QZZCRA aufnehmen. 6. Anschließend den Bandmonitor-Ausgangspegel an LINE OUT am Röhrenvoltmeter ablesen. **NORMALWERT: 0,65±0,05V** 7. Abweichungen können durch Abgleich von VR102 korrigiert werden.
Ⓟ Fluorezenzmeter Bedingung: * Aufnahme * Spitzen/VU-Wahlschalter: Peak Meßgerät: * Röhrenvoltmeter * Oszillograf * NF-Generator * Abschwächer	1. Den Meßaufbau zeigt Fig. 26. 2. Den Monitor-Wahlschalter in die "source"-Position stellen. 3. Signal vor 1kHz (−24±3dB) an die Line IN-Buchse eingeben und die Aufnahmetaste drücken. 4. Abschwächer so verstellen, daß der Quellen-Monitor-Ausgangspegel des linken Kanals 0,65V wird. * Die Dämpfung des Abschwächers an jener Stelle ist der Standard-Eingangspegel. **A. Abgleich der "−20dB"-Anzeige (Anzeige für den linken Kanal)** 5. Abschwächer um 20dB vom Standard-Eingangspegel dämpfen. (Der Quellen-Monitor-Ausgangspegel beträgt dann 0,065V.) 6. VR903 bis zum Anschlag im Uhrzeigersinn drehen. 7. Anschließend VR903 langsam entgegen dem Uhrzeigersinn drehen, bis die "−18dB"-Anzeige auf dem Meter erlöscht. **B. Abgleich der "0dB"-Anzeige (Anzeige für den linken kanal)** 8. abschwächer auf den Standard-Pegel einstellen. (Der Quellen-Monitor-Ausgangspegel beträgt dann 0,065V.) 9. VR907 entgegen dem Uhrzeigersinn bis zum Anschlag drehen. 10. VR907 langsam im Uhrzeigersinn drehen, bis die "+1dB"-Anzeige auf dem Meter erlöscht. **C. Balanceabgleich zwischen linkem und rechtem Kanal** 11. Nach dem Abgleich in B, VR902 (für den rechten Kanal) falls nötig abgleichen,so daß die Anzeige mit der Anzeige für den linken Kanal übereinstimmt. **D. Abgleich der "−42dB"-Anzeige.** * "−42dB"-Anzeige leuchtet bei eingeschalteter Stromzufuhr auf. 12. Abschwächer um 42dB vom Standard-Eingangspgel dämpfen. (Der Quellen-Monitor-Ausgangspegel beträgt dann 0,0052V.) 13. VR904 (für L-Kanal) und VR905 (für R-Kanal) im Uhrzeigersinn drehen. 14. Anschließend VR904 und VR905 langsam entgegen dem Uhrzeigersinn drehen, bis die "−40dB"-Anzeige auf dem Meter erlöscht.

Gegenstand	Messung und Einstellung
	E. Abgleich der "−22dB"-Anzeige 15. Abschwächer um 22dB vom Standard-Eingangspegel dämpfen. (Der Quellen-Monitor-Ausgangspegel beträgt dann 0,052V) 16. VR906 entgegen dem Uhrzeigersinn bis zum Anschlag drehen. 17. VR906 langsam in Uhrzeigersinn drehen, bis die "−20dB"-Anzeige auf dem Meter erlöscht.
Ⓠ Gesamt-Klirrfaktor Bedingung: * Aufnahme und Wiedergabe * Eingangsregler...Max * Ausgangsregler...Max Meßgerät: * Klirrfaktor-Meßgerät * NF-Generator * Abschwächer * Oszillograf * Testband (Leerband) QZZCRA für Normal	1. Den Meßaufbau zeigt Fig. 32. 2. Den Monitor-Wahlschalter in die "source"-Position stellen. 3. Dem NF-Eingang 315Hz zuführen und den Abschwächer so einstellen, daß am NF-Ausgang 0,65V stehen. 4. Den Monitor-Wahlschalter in die "tape"-Position stellen. 5. Die Aufnahme- und Wiedergabetaste drücken und Klirrfaktor des Bandmonitor-Ausgangssignals messen. 6. Wenn der Klirrfaktor den Normalwert übersteigt, ist der Vormagnetisierungsstrom zu prüfen. Ist dieser Strom kleiner als der Normalwert, nimmt der Klirrfaktor zu. Beim Einstellen des Vormagnetisierungsstromes ist zu beachten, daß dieser auch einen Einfluß auf den Gesamtfrequenzgang hat. Die Abschnitte "Gesamtfrequenzgang" und "Vormagnetisierung" beachten. **NORMALWERT: Weniger als 2,5% (Normal)**
Ⓡ Gesamt-frequenzgang Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Testband (Leerband) QZZCRA für Normal QZZCRX für CrO_2 QZZCRY für Fe-Cr QZZCRZ für Metal	**Anm.:** Vor Messung und Abgleich des Gesamtfrequenzganges ist sicherzustellen, daß der Frequenzgang bei Wiedergabe korrekt ist (Vgl. entspr. Abschnitt). 1. Den Meßaufbau zeigt Fig. 26. 2. Testband einlegen. 3. Den Monitor-Wahlschalter in die "source"-Position. 4. 1kHz vom NF-Generator über den Abschwächer dem NF-Eingang zuführen. 5. Den Abschwächer so einstellen, daß der Eingangspegel (−20dB des Stand-Aufnahmepegels berträge (Standard-Aufnahmepegel = Anzeige "0" des Pegel-Meters). 6. Zu diesem Zeitpunkt beträgt der Ausgangspegel 0,065V. 7. Den Monitor-Wahlschalter in die "tape"-Position stellen. 8. Bandmonitor-Ausgangspegel messen und den Unterschied in dB zwischen dem Bandmonitor-Ausgangspegel jeder Frequenz, basierend auf einem Ausgangspegel von 1kHz ermitteln. 9. Die Aufnahme- und Wiedergabetaste drücken und jede der folgenden Frequenzen zuführen: 1kHz, 30Hz, 70Hz, 700Hz, 6kHz, 8kHz, 10kHz, 13kHz, 15kHz, und 16kHz. 10. Sicherstellen, daß alle Meßwerte innerhalb der in Fig. 33, und Fig. 34 dargestellten Grenzen liegen.
Abgleich 1	1. Werden die mittleren und hohen Frequenzen gemäßder durchgezogenen Linie in Fig. 35 zu stark wiedergegeben, so ist der Vormagnetisierungsstrom durch Drehen, die folgenden VR zu erhöhen. Metal position...VR204, CrO_2 position .....VR203, Fe-Cr position...VR202, Normal position...VR853 (L-CH), VR854 (R-CH) 2. Wenn er niedriger wird, wie durch die gestrichelte Linie angezeigt, den Vormagnetisierungsstrom durch Drehen entgegen der Pfeilrichtung verringern. **Anm.:** 1. Müßte der Vormagnetisierungsstrom unter Normalwert eingestellt werden, um den geforderten Frequenzgang zu erreichen, so ist nach Anweisung 2 zu verfahren, weil zu geringer Vormagnetisierungsstrom den Klirrfaktor verschlechtert. 2. Für die Messung des Vormagnetisierungsstromes sei auf den Abschnitt "Vormagnetisierung" hingewiesen.
Abgleich 2	**Abgleich 2-Aufnahme-Entzerrerspule**

Gegenstand	Messung und Einstellung
	1. Verläuft der Frequenzgang bei mittleren Frequenzen flach und zeigt bei höheren Frequenzen einen scharfen Anstieg oder Abfall entsprechend Fig. 36 die folgenden Korrecturspulen zu erhöhen. Metal position .....L201 (L-CH), L202 (R-CH) CrO_2 position .....L203 (L-CH), L204 (R-CH) Fe-Cr position .....L205 (L-CH), L206 (R-CH) Normal position.....L203 (L-CH), L204 (R-CH)
Ⓢ Dolby-Schaltung Bedingung: * Aufnahme * Eingangsregler...Max Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Oszillograf	**A. Dolby-Kodierteil** 1. Dolby-NR-Schalter in die "out"-Position stellen. 2. 5kHz-Signal an LINE IN-Eingang zuführen, um am Meßpunkt [MO. OUT] auf der Dolby-Kodier-Leiterplatte −35dB zu erhalten. 3. Dolby-NR-Schalter in die "IN"-Position umstellen. 4. Ausgangspegel am Meßpunkt [REC OUT] messen. 5. 8dB größer ist als bei ausgeschaltetem Dolby-Schalter. **NORMALWERT: +8±0,5dB** 6. Weicht der Meßwert vom Standardwert ab, wie folgt abgleichen. (1) Dolby-NR-Schalter in die "IN"-Position stellen. (2) VR104 entgegen dem Uhrzeigersinn bis zum Anschlag drehen. (3) Zu dieser Zeit VR106 so abgleichen, daß der Ausgangspegel am Meßpunkt [REC OUT] −25dB wird. (4) Anschließend VR104 so abgleichen, daß der Ausgangspegel am Meßpunkt [REC OUT] −27dB wird. **B. Dolby-Dekodierteil** 1. Dolby-NR-Schalter in die "out"-Position stellen. 2. 5kHz-Signal an Meßpunkt [PLAY EQ] auf der Wiedergabe-EQ-AMP-Leiterplatte zuführen und Abschwächer so abgleichen, daß am Meßpunkt [MO. OUT] auf der Dolby-Dekodier-Leiterplatte −27dB erreich wird. 3. Dolby-NR-Schalter in die "IN"-Position umstellen. 4. Ausgangspegel am Meßpunkt [MO. OUT] messen. 5. Prüfen, ob der Wert bei der "IN"-Position des Dolby-NR-Schalters um 8dB kleiner ist als bei der "OUT"-Position. **NORMALWERT: −8±0,5dB** 6. Weicht der Meßwert vom Standardwert ab, wie folgt abgleichen. (1) Dolby-NR-Schalter in die "IN"-Position stellen. (2) VR103 entgegen dem Uhrzeigersinn bis zum Anschlag drehen. (3) Zu dieser zeit VR105 so abgleichen, daß der Ausgangspegel am Meßpunkt [MO. OUT] −37dB wird. (4) Anschließend VR105 so abgleichen, daß der Ausgangspegel am Meßpunkt [MO. OUT] −35dB wird.
Ⓣ Gesamt-Signal/ Rauschverhältnis Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Oszillograf * Testband (Leerband) ...QZZCRA	1. Den Meßaufbau zeigt Fig. 26. 2. Den Monitor-Wahlschalter in die Band-Position und den Bandwahlschalter in die CrO_2-Position stellen. 3. Unbespieltes Bezugsband einsetzen. 4. Gerät auf "Wiedergabe" schalten. 5. Den NF-Eingang 1kHz zuführen und den Abschwächer so einstellen, daß am NF-Ausgang 0,65V stehen. 6. Dann Stecker von LINE IN-Eingang trennen. 7. Bandmonitor-Ausgangsignalpegel von 1kHz und ohne Signal (Rauschen) messen und das Verhältnis in Dezibel (dB) ermitteln. 8. Für die Berechnung in dB sei auf den Abschnitt "Signal/ Rauschverhältnis bei Wiedergabe" verwiesen. **NORMALWERT: Größer als 45dB (Ohne Filter)**

Gegenstand	Messung und Einstellung
Ⓤ Test-Oszillator	**Test-Oszillatorpegel** 1. Den Spitzenwertschalter in die "400Hz/8kHz"-Position stellen. 2. Den Monitor-Wahlschalter in die "source"-Position stellen. 3. Gerät auf Aufnahme schalten. 4. Den Ausgangspegel des linken Kanals (400Hz) und rechten Kanals (8kHz) von LINE OUT messen. 5. Falls dis Ausgangspegel nicht übereinstimmen, VR3 abstimmen. **NORMALWERT: Gleicher Pegel**

RS-M95 FRANCAIS

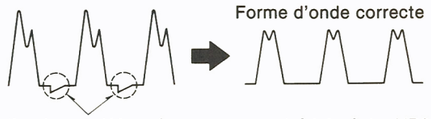
MESURES ET REGLAGES

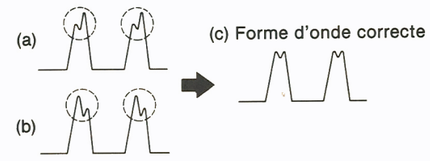
NOTA:

1. Vérifiez que les têtes soient propres.
2. Vérifiez que le cabestan et le galet-pressure soient propres.
3. Température ambiante admissible: 20±5°C.
4. Sélecteur de bande: Normal
5. Commutateur de contrôle: Position bande
6. Commande de réglage de la polarisation: Centre
7. Commande de niveau: MAX
8. Commande de niveau de sortie: MAX
9. Sélecteur de Dolby: OUT
10. Commutateur de test de crête: LINE
11. Meterhelligkeits-Regler: bright
12. Sélecteur crête/VU: Peak
13. Sélecteur maintien de crête: OFF
14. Sélecteur de minuterie: OFF

SECTION	MESURES ET REGLAGES
Ⓐ Réglage de l'alimentation	**Réglage +20V** 1. Brancher le voltmètre au point d'essai [20V TP] situé sur la plaquette de circuit d'alimentation et mesurer la tension. **Valeur normale: +20±0,5V** 2. Si la valeur mesurée n'est pas correct, régler VR801.
Ⓑ Pression du galet presseur Condition: * Position lecture Equipement: * Tensiomètre	1. Placez l'appareil en position lecture. 2. Accrocher le tensiomètre au point (A) de l'axe du galet presseur, et tirer le tensiomètre dans la direction opposée à la pression du galet presseur contre le cabestan (Voir fig. 8). 3. Lire la pression indiquée sur le tensiomètre immédiatement lorsque le galet presseur se dégage du cabestan et s'arrête de tourner. **Valeur normale: 400±30gr**
Ⓒ Tension de compensation Condition: * Position lecture Equipement: * Torsiomètre de cassette (QZZSRKCT)	1. Installer le torsiomètre de cassette sur l'appareil. 2. Placez l'appareil en position lecture. 3. Mesurer le couple de compensation dans les 15 secondes qui suivent le démarrage en mode de lecture. **Valeur normale: 40±2gr-cm** 4. Si la valeur lue se trouve hors tolérances, régler VR601.
Ⓓ Azimutage de tête Condition: * Position lecture Equipement: * Voltmètre électronique * Oscilloscope * Bande étalon (Fenêtre de passage de la bande avec mirroir.) ...QZZCRD * Bande étalon (Azimutage)...QZZCFM	**Réglage de la tête multiple** 1. Branchez les appareils comme ci-dessous. (Fig. 9). 2. Lisez la bande étalon (QZZCRD). 3. Ces conditions étant remplies, réglez les vis (A) et (B) montrés à la fig. 10 et 12 pour que la bande ne fasse pas de boucle ou ne se déforme par les guides-bandes de la tête d'effacement et de la tête multiple. (la fig. 11 montre la position correcte). **Nota:** En ce qui concerne la tête multiple, réglez soigneusement la hauteur de manière à ce que la surface de la tête se mette en contact parallèlement avec la bande comme il est montré à la fig. 12. 4. Lisez la bande étalon d'azimutage (QZZCFM, 8kHz). 5. Réglez la vis (C) d'orientation fig. 10 de la tête multiple pour obtenir le niveau maximal à la sortie LINE OUT. 6. Mesurez les deux canaux, et ajustez les niveaux à égalite de tension de sortie. 7. Après réglage, bloquez la vis par une goutte de vernis.

SECTION	MESURES ET REGLAGES
Ⓔ Vitesse de éfilement Condition: * Position lecture Equipement: * Compteur électronique numérique ou fréquencemètre numérique * Bande étalon...QZZCWAT	**Précision de la vitesse de éfilement** 1. Branchez les appareils comme ci-dessous. (Voir fig. 13). 2. Lisez la bande étalon (QZZCWAT, 3000Hz) et appliquez le signal de sortie au fréquencemtre. 3. Mesurez sa fréquence. 4. Surla base de 3000Hz, déteminez a valeur à l'aide de la formule. Précision de vitesse = $(\frac{f-3000}{3000}\times 100)\%$ avec f = valeur mesurée. 5. Effectuez la mesure sur la partie médiane de la bande. **Valeur normale: ±0,4%** **Fluctuations de vitesse de défilement** Faites les mesures de la même façon que ci-dessus (au début, au milieu et en fin de bande) et déterminez la différence entre les valeurs maximale et minimale, puis calculez comme suit. Fluctuations de vitesse = $(\frac{f_1-f_2}{3000}\times 100)\%$ f_1 = valeur maximal f_2 = valeur minimale **Valeur normale: 0,3%**
Ⓕ Pleurage et scintillement Condition * Position lecture Equipement: * Fluctuomètre * Bande étalon...QZZCWAT	1. Branchez les appareils comme ci-dessous. 2. Utilisez la bande étalon (3000Hz) et mesurez son signal de sortie avec le fluctuomètre. 3. Le pleurage et le scintillement sont exprimés en pourcentage et cette mesure put être pondérée par le filter JIS (WRMS). 4. Effectuez la mesure au milieu de la bande étalon. **Valeur normale: 0,04% (WRMS)**
Ⓖ Réglage du circuit moteur du cabestan	**A. Réglage normal de la tension d'alimentation en courant continu** 1. Mesurer la tension en courant continu entre le point central de VR703 et la borne (6) de IC702 comme illustré ci-dessous. **Valeur normale: 0V±0,05V** 2. Si la valeur lue se trouve hors tolérances, régler VR703. **B. Réglage du point de verrouillage de phase** 1. Mesurer la tension en courant continu entre la borne (4) de IC702 et la masse comme illustré ci-dessous. **Valeur normale: 5,2±0,1V** 2. Si la valeur lue se trouve hors tolérances, régler VR702. **C. Réglage du niveau de sortie du signal de détection de position** 1. Brancher un oscilloscope au point d'essai (T.P [PV]). 2. Mesurer la tension crête à crête du signal de détection de position du point d'essai à l'aide de l'oscilloscope. 3. Si la tension de signal mesurée est différente d'une façon prononcée de la tension montrée ci-dessous, effecturer le réglage nécessaire avec VR701.
Ⓗ Réponse en fréquence à la lecture Condition: * Position lecture * Commande de niveau de sortie: MAX.	1. Branchez les appareils de mesure comme pour "l'azimutage de tête", mais en utilisant la bande étalon (QZZCFM) au lieu de la bande étalon d'azimutage (voir fig. 9). 2. Placez l'appareil en position lecture. 3. Lisez la bande étalon de courbe de réponse (QZZCFM). 4. Mesurez les niveaux de sortie à 12,5kHz, 8kHz, 4kHz, 1kHz, 315Hz, 250Hz, 125Hz et 63Hz et comparez chaque niveau de sortie avec celui de la fréquence étalon de 333Hz, sur la borne LINE OUT.

SECTION	MESURES ET REGLAGES
Equipement: * Voltmètre électronique * Oscilloscope * Bande étalon...QZZCFM	5. Effectuez la mesure sur les deux canaux. 6. Vérifiez que les valeurs mesurées se situent à l'intérieur du gabarit de courbe de réponse. 7. Si les valeurs ne sont pas correctes, réglez VR1 (canal gauche) et VR2 (droit) (Voir fig. 35).
I Gain à la lecture Condition: * Position lecture * Commande de niveau de sortie: MAX. Equipement: * Voltmètre électronique * Oscilloscope * Bande éltalon...QZZCFM	1. Branchez les appareils selon la fig. 9. 2. Lisez la partie "niveau standard" de la bande étalon (QZZCFM, 315Hz) et mesurez le niveau de sortie, avec le voltmètre électronique, sur le jack LINE OUT. 3. Effectuez les mesures sur les deux canaux. **Valeur normale: 0,65±0,05V** **Réglage** 1. Si la valeur mesurée n'est pas correct, réglez VR101 (canal gauche) et VR101 (droit) (Voir fig. 37). 2. Après réglage, vérifiez à nouveau la "réponse en fréquence à la lecture".
J Rapport signal/bruit de lecture Condition: * Position lecture * Commande de niveau de sortie: MAX. Equipement: * Voltmètre électronique * Oscilloscope * Bande étalon...QZZCFM * Cassette vide	1. Branchez les appareils comme sur la fig. 9. 2. Lisez la partie "niveau étalon" de la bande étalon (QZZCFM, 315Hz) et lisez le niveau de sortie sur le voltmètre électronique. 3. Placez une cassette vide (qui a été coupée) et lisez à nouveau. 4. Mesurez alors le niveau de bruit avec le voltmètre électronique, et déterminez le rapport entre ce niveau et celui au niveau stardard (315Hz). **Valeur normale: plus de 47dB**
K Fuites de Prémagnétisation Condition: * Position enregistrement * Commandes de niveau MIC et LINE IN...MAX. Equipement: * Voltmètre électronique * Oscilloscope	1. Branchez les appareils comme ci-dessous (voir fig. 20). 2. Placez l'appareil en position enregistrement. 3. Réglez les bobines de la trappe L851 (canal gauche) et L852 (droit) pour que la mesure soit au minimum. 4. Effectuez ce réglage pour les deux canaux.
L Circuit d'amplification de polarisation d'enregistrement Réglage de la frome d'onde du courant de base de transistor. Condition: * Position enregistrement Equipement: * Oscilloscope * Voltmètre électronique	**A. Partie inférieure de la forme d'onde** 1. Placer le sélecteur de bande à la position "Metal". 2. Appuyer sur les boutons d'enregistrement et de pause. 3. Brancher l'oscilloscope à 1 (pour Q853) et 2 (pour Q854). 4. Observer la forme d'onde sur l'oscilloscope, et régler VR851 (pour Q853) et VR852 (pour Q854) de sorte que la partie inférieure de la forme d'onde est comme sur la figure 22.  Si l'onde est déformée comme montré ici, régler VR851 et VR852. Fig. 22 **Nota:** La forme d'onde peut être améliorée en tournant VR851 et VR852 dans le sens contraire des aiguilles d'une montre. Arrêter immédiatement de tourner VR851 et VR852 après élimination de la partie déformée de l'onde.

SECTION	MESURES ET REGLAGES
	B. Partie supérieure de la forme d'onde 5. Après avoir réglé la partie inférieure de la forme d'onde, observer la partie supérieure de l'onde. 6. Si la forme d'onde est asymétriquement déformée comme montré sur la figure 23, régler T852.  Fig. 23 **Nota:** Si la forme d'onde est observée comme dans (a), tourner T852 dans le sens des aiguilles d'une montre. Si la forme d'onde est observée comme dans (b), tourner T852 dans le sens contraire des aiguilles d'une montre. Dans chaque cas, il faut arriver à une figure symétrique comme montré en (c).
M Courant de prémagnétisation Condition: * Position enregistrement * Lorsquón règle le courant de prémagnétisation pour un seul canal; le courant de láutre peut varier. * Commande de reglage de la polarisation: centre Equipement: * Voltmètre électronique * Oscilloscope	1. Branchez les appareils comme ci-dessous (voir fig. 24). 2. Placez l'appareil en position enregistrement, le sélecteur de bande sur "normal" (pour bande normale). 3. Lisez la tension sur le voltmètre électronique et calculez le courant de prémagnétisation selon la formule. $\text{Courant de prémagnétisation (A)} = \frac{\text{Tension lue sur voltm.élec. (V)}}{10(\Omega)}$ **Valeur normale: 1±0,3mA** 4. Réglez VR853 canal gauche et VR854 (canal droit). 5. Puis, en plaçant le sélecteur de bande à la position Fe-Cr, mesurer le courant de polarisation. **Valeur normale: 1,1±0,3mA** 6. Si la valeur lue se trouve hors tolérances, régler VR202. 7. Placer le sélecteur de bande à la position CrO_2 et mesurer le courant de polarisation. **Valeur normale: 1,5±0,4mA** 8. Si la valeur lue se trouve hors tolérances, régler VR203. 9. Placer le sélecteur de bande à la position "Metal", mesurer le courant de polarisation. **Valeur normale: 2,2±0,6mA** 10. Si la valeur lue se trouve hors tolérances, régler VR204.
N Courant d'effacement Condition: * Position enregistrement Equipement: * Voltmètre électronique * Oscilloscope	1. Branchez les appareils comme ci-dessous (voir fig. 25). 2. Placer le sélecteur de bande à la position "Metal". 3. Placez l'appareil en position enregistrement. 4. Mesurer la tension sur le voltmètre électronique. 5. Déterminer le courant d'effacement avec la formule suivante. $\text{Courant d'effacement (A)} = \frac{\text{Tension aux bornes de la résistance R861 (V)}}{1(\Omega)}$ **Valeur normale: 95^{+5}_{-0}mA (position Metal)** 6. Si la valeur lue se trouve hors tolérances, régler VR201.

SECTION	MESURES ET REGLAGES
O Gain global Condition * Commande de niveau LINE IN...MAX. * Commande de niveau de Sortie...MAX. * Niveaux d'entrée normaux MIC −72±4dB LINE IN −24±3dB Equipement: * Générateur AF * Voltmètre électronique * Atténuateur * Oscilloscope * Bande étalon vierge ...QZZCRA pour type de bande normale	1. Branchez les appareils comme sur la fig. 26. 2. Placez l'appareil en position enregistrement, le sélecteur de bande sur "normal". 3. Appliquer un signal de 1kHz (−24dB) de l'oscillateur AF, branché à l'ATT, à l'entrée LINE IN. 4. ATT so abstimmen, daß der Ausgangspegel an der LINE OUT-Buchse 0,65V wird (niveau de contrôle sonore de la source). 5. Placez l'appareil en position enregistrement. 6. Puis, mesurer le niveau de sortie de contrôle sonore de la bande à la sortie LINE OUT sur le voltmètre électronique. **Valeur normale: 0,65±0,05V** 7. Si la valeur lue se trouve hors tolérances, régler VR102.
P Indicateur de niveau	1. Branchez les appareils comme ci-dessous (Voir fig. 26). 2. Placer le commutateur de contrôle sonore à la position "source". 3. Appliquez un signal à 1kHz (−24±3dB) du générateur AF, à travers l'atténuateur, à l'entrée LINE IN. 4. Régler ATT de sorte que le niveau de sortie de contrôle de la source du canal LEFT (gauche) devienne 0,65V. * L'atténuation de ATT à ce point est le niveau d'entrée normal. **A. Réglage de l'indication "−20dB" (Indication du canal gauche)** 5. Atténuer ATT de 20dB du niveau d'entrée normal. (Ensuite, le niveau de sortie du contrôle sonore de la source sera 0,065V.) 6. Tourner complètement VR903 dans le sens des aiguilles d'une montre. 7. Puis, tourner lentement VR903 dans le sens contraire des aiguilles d'une montre jusqu'à ce que l'indication "−18dB) sur l'indicateur s'éteigne. **B. Réglage de l'indication "0dB" (Indication du canal gauche)** 8. Placer ATT au niveau normal. 9. Tourner complètement VR907 dans le sens contraire des aiguilles d'une montre. 10. Tourner lentement VR907 dans le sens des aiguilles d'une montre jusqu'à ce que l'indication "+1dB" sur l'indicateur s'éteigne. **C. Réglage de la balance entre les canaux droit et gauche.** 11. Après le réglage en B, régler VR902 (pour le canal droit), si nécessaire, de sorte que l'indication du canal droit soit pareille que l'indication du canal gauche. **D. Réglage de l'indication "−42dB"** * L'indication "−42dB" s'allume lors de la mise en marche de l'alimentation. 12. Atténuer ATT de 42dB du niveau d'entrée normal. (Ensuite, le niveau de sortie du contrôle sonre de la source sera 0,052V.) 13. Tourner complètement VR904 (pour L-CH) (canal gauche) et VR905 (pour R-CH) (canal droit) dans le sens des aiguilles d'une montre. 14. Tourner lentment VR904 et VR905 dans le sens contraire des aiguilles d'une montre jusqu'à ce que l'indication "−40dB" sur l'indicateur s'éteigne. **E. Réglage de l'indication "−22dB"** 15. Atténuer ATT de 22dB du niveau d'entrée normal. (Ensuite, le niveau de sortie du contrôle sonore de la source sera 0,052V.) 16. Tourner complètement VR906 dans le sens contraire des aiguilles d'une montre. 17. Tourner lentement VR906 dans le sens des aiguilles d'une montre jusqu'à ce que l'indication "−20dB" sur l'indicateur s'éteigne.

SECTION	MESURES ET REGLAGES
Q Distorsion globale Equipement: * Distorsiomètre * Générateur AF * Atténuateur * Oscilloscope * Bande étalon vierge QZZCRA pour type normal	1. Branchez les appareils comme sur la fig. 32. 2. Placer le sélecteur decontrôle sonore à la position "source" et le sélecteur de bande à la position normal. 3. Appliquez un signal à 315Hz à l'entrée LINE IN et réglez l'atténuateur pour que le niveau de sortie sur LINE OUT soit de 0,65V. 4. Placer le sélecteur de contrôle sonore à la position "tape". 5. Appuyer sur les boutons d'enregistrement et de lecture et mesurer le facteur de distorsion du signal de sortie du contrôle sonore de la bande. 6. Lorsque le taux de distorsion n'est pas satisfaisant, vérifiez le courant de prémagnétisation. Lorsque le courant de prémagnétisation est trop faible, la distorsion augmente. Soyez pruden lors de ce réglage, car le col rant de prémagnétisation a aussi une influence sur la courbe de réponse globale. Rsportez-vous aux paragraphes "courbe de réponse globale" et "réglage du courant de prémagnétisation". **Valeurs normales: monis de 2,5%**
R Courbe de réponse globale Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Bande étalon vierge ...QZZCRA pour type normale ...QZZCRX pour CrO_2 ...QZZCRY pour Fe-Cr ...QZZCRZ pour Metal	**Nota:** Avant de mesurer et régler, vérifiez que la courbe de réponse en lecture est correct (pour la méthode de mesure, reportez-vous au paragraph considéré). 1. Branchez les appareils de mesure comme surla fig. 26. 2. Mettre la bande d'essai vierge de référence en place. 3. Placer le sélecteur de contrôle sonore à la position "source". 4. Appliquez un signal à 1kHz du générateur AF, à travers l'atténuateur, à l'entrée LINE IN. 5. Réglez l'atténuateur pour que le niveau d'entrée soit inférieur de −20dB au niveau étalon d'enregistrement (qui est égal à 0VU). 6. A ce moment, le niveau sur LINE OUT est de 0,065V. 7. Placer le sélecteur de contrôle sonore à la position "tape". 8. Appuyer sur les boutons d'enregistrement et de lecture et appliquer les signaux de fréquence suivants: 1kHz, 30Hz, 70Hz, 700Hz, 6kHz, 8kHz, 13kHz, 15kHz et 16kHz. 9. Mesurer le niveau de sortie de contrôle sonore de la bande et exprimer en dB la différence entre le niveau de sortie du controle sonore de la bande de chaque fréquence basée sur le niveau de sortie de 1kHz. 10. Vérifiez que les valeurs mesurées s'inscrivent bien à l'intérieur du gabarit de courbe de réponse globale avec bande au Metal, CrO_2 normal et Fe-Cr ci-dessous.
Réglage 1	1. Lorsque la courbe de réponse dépasse le gabarit entre le médium et l'aigu, comme indiqué par le trait plein de la fig. 35, augmentez le courant de prémagnétisation en tournant les VR suivants. Position Normal.....VR853 (L-CH), VR854 (R-CH) Position Fe-Cr .....VR202 Position CrO_2.....VR203 Position Metal .....VR204 2. Si elle Baisse, comme montré par la ligne en pointillée, réduire le courant de polarisation en tournant dans la direction opposée à celle indiquée par la fléche. **Nota:** 1. Pour les réglages avec un courant de prémagnétisation inférieur à la valeur normale, utilisez la seconde méthode, car une réduction du courant de prémagnétisation audessous de cette valeur risque de détériorer le taux de distorsion. 2. Pour la mesure du courant de prémagnétisation, reportez-vous au paragraphe correspondant.
Réglage 2	**Réglage 2—Utilisation des bobines de corection d'enregistrement**

SECTION	MESURES ET REGLAGES
	1. Lorsque la courbe de réponse est plate dans le médium et croit ou chute fortement dans l'aigu, comme indiqué par la Fig. 36, réqlez en tournant les bobines suivants de correction d'enregistrement avec les bandes normales. Position Metal .....L201 (L-CH), L202 (R-CH) Position CrO_2.....L203 (L-CH), L202 (R-CH) Position Fe-Cr .....L205 (L-CH), L206 (R-CH) Position Normal.....L207 (L-CH), L208 (R-CH)
Ⓢ Circuit Dolby Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Oscilloscope	**A. Bloc Encodeur Dolby** 1. Placer le sélecteur Dolby NR à la position "out". 2. Appliquer un signal de 5kHz à la sortie LINE IN pour obtenir −35dB au point d'essai [MO. OUT] sour la plaquette de circuit du codeur Dolby. 3. Placer ensuite le sélecteur Dolby NR à la position IN. 4. Mesurer le niveau de sortie au point d'essai [REC OUT] . 5. Vérifiez que la valeur en position IN du sélecteur Dolby augmente de 8dB par rapport à celle obtenue en position OUT. **Valeur normale: +8±0,5dB** 6. Si la valeur mesurée se trouve hors tolérances, régler comme suit. (1) Place le sélecteur Dolby NR à la position "IN". (2) Tourner complètement VR104 dan le sens des aiguilles d'une montre. (3) A cet instant, régler VR106 de sorte que le niveau de sortie au point d'essai [REC OUT] devienne −25dB. (3) Régler ensuite VR104 de sorte que le niveau de sortie au point d'essai [REC OUT] devienne −27dB. **B. Block Décodeur** 1. Placer le sélecteur Dolby NR à la position "out". 2. Appliquer un signal de 5kHz au point d'essai [PLAY EQ] sur la plaquette de circuit EQ AMP et régler ATT afin d'obtenir −27dB au point d'essai [MO. OUT] sur la plaquette de circuit du décodeur Dolby. 3. Placer ensuite le sélecteur Dolby NR à la position IN. 4. Mesurer le niveau de sortie au point d'essai [MO. OUT] . 5. Confirmer que la valeur à la position "IN" est 8dB plus petits que la valeur à la position "OUT" du sélecteur Dolby NR. **Valeur normale: −8±0,5dB** 6. Si la valeur mesurée se trouve hors tolérances, régler comme suit. (1) Placer le sélecteur Dolby NR à la position "IN". (2) Tourner complètement VR103 dans le sens contraire des aiguilles d'une montre. (3) A cet instant, régler VR105 de sorte que le niveau de sortie au point d'essai [MO. OUT] devienne −27dB. (4) Régler ensuite VR103 de sorte que le niveau de sortie au point d'essai [MO. OUT] devienne −35dB.
Ⓣ Rapport signal/bruit global Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Oscilloscope * Bande étalon vierge ... QZZCRX	1. Branchez les appareils comme sur la fig. 26. 2. Placer le sélecteur de contrôle sonore [illegible] position "tape" et le sélecteur de bande à la position CrO_2. 3. Mettre la bande d'essai vierge de référence (QZZCRX) en place. 4. Placez l'appareil en position enregistrement. 5. Appliquez un signal à 1kHz à l'entrée LINE IN et réglez l'atténuateur pour que le niveau de sortie sur LINE OUT soit de 0,65V. (Commutateur de contrôle: Position bande). 6. Puis, débrancher la fiche d'entrée à l'entrée LINE IN. 7. Mesurer les niveaux de signal de sortie de contrôle sonore de la bande de 1kHz et niveau de signal nul (bruit), et déterminer le rapport en decibels (dB).

SECTION	MESURES ET REGLAGES
	8. Cette valeur est la différeznce entre le "rapport S/B à la lecture" et le "rapport S/B global" mains, pour les calculs de décibels, reportez-vous au paragraphe "mesure du rapport S/B à la lecture" en page 6. **Valeur normale: mieux que 45dB (sans filter NAB)**
Ⓤ Oscillateur d'essai	**Niveau de l'oscillatear** 1. Placer le commutateur de test de crête sonore à la position "400Hz/8kHz". 2. Placer le commutateur de contrôle sonore à la position "source". 3. Placez l'appareil en position enregistrement. 4. Measurer le canal sortie des canaux gauche (400Hz) et droit (8kHz) de la sortie ligne (LINE OUT). 5. Si les niveaux de sortie ne sont pas identiques régler VR3. **Valeur normale: niveau identique**